



**4E. Individuals with Opioid Misuse**

The components of this abatement category are subsumed in other abatement interventions that I propose including Health Professional Education, Safe Storage and Drug Disposal, and interventions targeting Adolescents and Young Adults.

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Lake County Opioid Epidemic Abatement Estimates  
Last updated: April 14, 2021

This worksheet contains redress models and their population inputs  
for opioid abatement, 2021-2035

**Abatement Categories**

**Category 1: Prevention - Reducing Opioid Oversupply and Improving Safe Opioid Use**

- 1A. Health Professional Education
- 1B. Patient and Public Education
- 1C. Safe Storage and Drug Disposal
- 1D. Community Prevention and Resiliency
- 1E. Harm Reduction
- 1F. Surveillance, Evaluation, and Leadership

**Category 2: Treatment - Supporting Individuals Affected by the Epidemic**

- 2A. Connecting Individuals to Care
- 2B. Treatment for Opioid Use Disorder
- 2C. Managing Complications Attributable to the Epidemic
- 2D. Workforce Expansion and Resiliency
- 2E. Distributing Naloxone and Providing Training

**Category 3: Recovery - Enhancing Public Safety and Reintegration**

- 3A. Public Safety
- 3B. Criminal Justice System
- 3C. Vocational Training, Education, and Job Placement
- 3D. Mental Health Counseling and Grief Support

**Category 4: Addressing Needs of Special Populations**

- 4A. Pregnant Women, New Mothers, and Infants
- 4B. Adolescents and Young Adults
- 4C. Families and Children
- 4D. Homeless and Housing Insecure Individuals
- 4E. Individuals with Opioid Misuse



I provide population estimates for different abatement categories. The population that is relevant for each category over time is estimated using one of five approaches (Table 1):

**CONSTANT** – The population of some categories is held constant. In other words, I assume the number of Bridge programs for emergency departments (EDs) should be held constant over the 35 years of the abatement plan.

**WORKFORCE** – For some categories, I estimate the change in key populations using data from the Ohio Department of Job and Family Services for the projected percent change in employment for various occupations. I convert 2018 to 2028 10-year employment outlook to a annual projected change to estimate growth in employment from 2021 to 2035. For example, the 10-year employment outlook for nurse practitioners is 24.6%, which I convert to an annual estimate of 2.2% and I apply it to the number of nurse practitioners in 2023 in Lake County to estimate the number of nurse practitioners from 2021 to 2035.

**GENERAL POPULATION** – For some categories, I estimate the number of relevant individuals using population projections from the U.S. Census Bureau. For example, the projected number of residents in Lake County through 2035 is estimated using these data.

**TARGET POPULATION** – For some categories, I vary the coverage and/or the intensity of specific abatement programs over time based on the short- and long-term needs and to allow for realistic scaling. For example, mass media campaigns should reach 85% of the target population in year 1 and decrease over time to reach 75% of the target population in year 15. Additionally, the proportion of individuals on medications for addiction treatment (MAT) should increase over time from 30% in year 1 to 60% in year 15 to better comply with evidence-based treatment guidelines.

**INTERVENTION POPULATION** – For some categories, I apply a trend ratio that represents the expected reduction in relevant populations based on the implementation of the abatement plan I propose. Several models,<sup>2,4</sup> including ours,<sup>5</sup> project the expected impact of different combinations of interventions such as: (1) reducing opioid prescribing; (2) cutting diversion; (3) increasing addiction treatment; (4) reducing treatment relapse; and (5) increasing naloxone distribution. Depending upon the specifics, these models estimate a reduction of approximately 10%-40% in opioid-related morbidity and mortality, including the number of opioid overdose deaths and the number of individuals with opioid use disorder (OUD), over a period of 5-10 years. Given that I propose more comprehensive, coordinated and sustained interventions, I project that they will reduce the number of individuals with OUD and other relevant populations by 50% over 15 years and scale select populations accordingly (Table 2). For example, I apply the intervention population trend ratio to the number of individuals with OUD in Lake County to reflect a decrease in the size of this population over time as the abatement plan is implemented.

1. Pitt AL, Humphrey K, Braverman MH. Modeling Health Benefits and Harms of Public Policy Responses to the U.S. Opioid Epidemic. *American Journal of Public Health*. 2018;108:1394-400.

2. Wakeman E, Nelson A, Coley M, et al. A Dynamic Model of Nonmedical Opioid Use: Trajectories and Potential Policy Interventions. *The American Journal of Drug and Alcohol Abuse*. 2015;41:508-18.

3. Chen Q, Jangchit A, Mihalik PR, Wakeman SE, Freedberg KA, Rehmet T, Jacobsen AB, Pernell Linda PV. Preventing Prescription Opioid Misuse and Projected Opioid-Related Deaths in the United States. *JAMA Network Open*. 2019;2:e187621.

4. Horner J, Wakeman E. A Dynamic Model of the Opioid Drug Epidemic With Implications for Policy. *The American Journal of Drug and Alcohol Abuse*. 2016;33:71-8.

5. Rehm J, Mironov O, Hu S, Chirguimio F, Potashnik A, Dowdy DM, Alexander GC. Modeling MAT on Scaling up to Reduce Opioid-Related Mortality in the U.S. *JAMA Network Open*. 2020;3:e203677.

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#### 4D. Homeless and Housing Insecure Individuals

	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Permanent supportive housing</u>																
[1] Total number of homeless individuals with OUD		16	15	15	14	13	13	12	12	11	11	10	10	9	9	8
[2] Permanent supportive housing for homeless individuals with OUD		16	15	15	14	13	13	12	12	11	11	10	10	9	9	8
<u>2. Recovery housing</u>																
The components of this abatement category are subsumed in 2B (1. ASAM levels of care for OUD treatment), 3B (3. Transitional housing for newly released), and 4A (3. Prenatal and postpartum housing services)																
[3] Intervention Population Trend Ratio		0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50
<b>OUD Opioid Use Disorder; ASAM American Society of Addiction Medicine</b>																
<b>Notes</b>	<b>Input</b>	<b>Source(s)</b>														
[1] Number of homeless individuals with OUD * [3]	17	Number of homeless individuals * Proportion of homeless population with OUD.														
Number of homeless individuals in Lake County	93	2019 data. Ohio Balance of State CoC. 2019 Point in Time Count (Individuals). <a href="https://public.tableau.com/profile/ohioboscoc#!/vizhome/2019PointInTimeCountOhioBalanceOfStateCoC/Individuals">https://public.tableau.com/profile/ohioboscoc#!/vizhome/2019PointInTimeCountOhioBalanceOfStateCoC/Individuals</a> .														
Proportion of homeless individuals with OUD	17.9%	2012 data. Iheanacho T, Stefanovics E, Rosenheck R. Opioid Use Disorder and Homelessness in the Veterans Health Administration: The Challenge of Multimorbidity. <i>Journal of Opioid Management</i> . 2018;14:171-82.														
[2] = [1]		All homeless individuals with OUD should receive permanent supportive housing. Expert opinion.														
[3] Retrieved from "Abatement Scaling" tab																
<b>Costs Description</b>																
[2] Permanent supportive housing cost per person																

Notes	Input	Source(s)
[1] Number of children living with parents with OUD * [15]	1,197	2017 data. An estimated 57,500 children were residing in a household with a parent with OUD in Ohio in 2017. This estimate was multiplied by 2.1%, which is the 2016-2019 average proportion of opioid overdose deaths in Lake County (77 deaths) out of the state's total (3,730 deaths; CDC WONDER data). Brundage SC, Levine C. The Ripple Effect: The Impact of the Opioid Epidemic on Children and Families. United Hospital Fund and Milbank Memorial Fund. Published 2019. <a href="https://uhfny.org/media/filer_public/6e/80/6e80760f-d579-46a3-998d-1aa816ab06f6/uhf_ripple_effect_national_and_state_estimates_chartbook.pdf">https://uhfny.org/media/filer_public/6e/80/6e80760f-d579-46a3-998d-1aa816ab06f6/uhf_ripple_effect_national_and_state_estimates_chartbook.pdf</a> .
[2] = [1] * 47.9%	47.9%	Proportion of children who received a child welfare investigation with emotional, behavioral, or mental health issue. Expert opinion.
[3] = [1] / 2.4	2.4	Median household size in Lake County. Retrieved from tab "3D. Mental Health Counseling", input [5] notes.
[4] = [3] * 47.9%	47.9%	Proportion of children who received a child welfare investigation with emotional, behavioral, or mental health issue. Expert opinion.
[5] = [3] * 47.9%	47.9%	Proportion of children who received a child welfare investigation with emotional, behavioral, or mental health issue. Expert opinion.
[6] Number of children in foster care due to parental opioid use * [15]	41	Number of children in foster care * Proportion of children in foster care due to parental opioid use.
Number of children in foster care	146	2016 and 2018 data. Average number of children placed in out of home care in Lake County in 2016 and 2018. Public Children Services Association of Ohio (PCSAO). Lake County Profile, 2019 PCSAO Factbook, 14th edition. <a href="https://www.pcsao.org/pdf/factbook/2019/Lake.pdf">https://www.pcsao.org/pdf/factbook/2019/Lake.pdf</a> .
Proportion of children in foster care due to parental opioid use	28.0%	Informed by Public Children Services Association of Ohio. PCSAO Factbook 13th Edition 2017. <a href="http://www.pcsao.org/pdf/factbook/2017/Front.pdf">http://www.pcsao.org/pdf/factbook/2017/Front.pdf</a> .
[7] = [6] * 40.0%	40.0%	More than 40.0% of children in foster care are estimated to have an emotional, behavioral, or mental health challenge. Expert opinion.
[8] = [6] / 2.4	2.4	Median household size in Lake County. Retrieved from tab "3D. Mental Health Counseling", input [5] notes.
[9] = [8] * 47.9%	47.9%	Proportion of children who received a child welfare investigation with emotional, behavioral, or mental health issue. Expert opinion.
[10] = [8] * 47.9%	47.9%	Proportion of children who received a child welfare investigation with emotional, behavioral, or mental health issue. Expert opinion.
[11] Number of children adopted due to parental opioid use * [15]	5	Number of children adopted * Proportion of children in adopted due to parental opioid use.
Number of children adopted	18	Average number of children adopted in Lake County in 2016 and 2018. Public Children Services Association of Ohio (PCSAO). Lake County Profile, 2019 PCSAO Factbook, 14th edition. <a href="https://www.pcsao.org/pdf/factbook/2019/Lake.pdf">https://www.pcsao.org/pdf/factbook/2019/Lake.pdf</a> .
Proportion of children adopted due to parental opioid use	28.0%	Same as proportion of children in foster care due to parental opioid use.
[12] = [11] * 54.0%	54.0%	Approximately half (54.0%) of children adopted from foster care have special needs, including behavioral and mental health issues. Expert opinion.
[13] = [11] / 2.4	2.4	Median household size in Lake County. Retrieved from tab "3D. Mental Health Counseling", input [5] notes.
[14] = [13] * 47.9%	47.9%	Proportion of children who received a child welfare investigation with emotional, behavioral, or mental health issue. Expert opinion.
[15] Retrieved from "Abatement Scaling" tab		
<b>Costs Description</b>		
[2] Socio-emotional support cost per child		
[4] Intensive parent-child interventions cost per family		
[5] Peer/family mentoring services cost per family		
[6] Foster care cost per child		
[7] Socio-emotional support cost per child		
[9] Intensive parent-child interventions cost per family		
[10] Family treatment court cost per family		
[11] Adoption cost per child		
[12] Socio-emotional support cost per child		
[14] Intensive parent-child interventions cost per family		

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	B	C	D	E	F	G	H	I	J	K	L	M
Table 1. List of Trend Ratios Applied to Populations by Abatement Category												
Note: populations not listed in this table are held constant.												
Abatement Category	Population		Relevant Trend Ratio									
1A. Health Professional Education	Total number of prescribers eligible to receive academic detailing in Lake County		Workforce									
	Proportion of prescribers to receive academic detailing		Target Population									
	Total number of prescribers eligible for continuing professional education		Workforce									
1B. Patient and Public Education	Total Lake County population aged 12 years and older		General Population									
	Proportion of Lake County population to be targeted by media campaigns		Target Population									
1C. Safe Storage and Drug Disposal	Total Lake County population		General Population									
	Proportion of medications collected that are opioids		Target Population									
1D. Community Prevention and Resiliency	Total Lake County population aged 12 years and older		General Population									
	Total number of opioid injection drug users		Intervention Population									
1E. Harm Reduction	Proportion of opioid injection drug users reached by SPSs		Target Population									
	Proportion of opioid injection drug users to receive fentanyl testing strips		Target Population									
2A. Connecting Individuals to Care	Total number of opioid-related ED visits and hospitalizations		Intervention Population									
	Total number of individuals with OUD		Intervention Population									
2B. Treatment for Opioid Use Disorder	Proportion of individuals with OUD to receive treatment*		Target Population									
	Proportion of individuals with OUD in treatment to receive MAT		Target Population									
	Proportion of individuals to receive ACT		Target Population									
	Total number of opioid injection drug users		Intervention Population									
	Proportion of opioid injection drug users to be screened		Target Population									
2C. Managing Complications Attributable to the Epidemic	Total number of new HCV cases with opioid-related IVDU		Intervention Population									
	Total number of new HIV cases with opioid-related IVDU		Intervention Population									
	Total number of new endocarditis cases with opioid-related IVDU		Intervention Population									
	Total number of prescribers in Lake County		Workforce									
	Total number of opioid-related ED visits and hospitalizations		Intervention Population									
2D. Workforce Expansion and Resiliency	Total number of first responders eligible to receive compassion fatigue interventions		Workforce									
	Proportion of first responders to receive compassion fatigue interventions		Target Population									
	Proportion of prescribers to receive compassion fatigue interventions		Target Population									
	Total Lake County population aged 18 years and older		General Population									
2E. Distributing Naloxone and Providing Training	Total number of first responders in Lake County eligible to receive training		Workforce									
	Number of opioid-related ED visits and hospitalizations in Lake County		Intervention Population									
	Total number of OUD patients eligible for Narcan® distribution		Intervention Population									
	Proportion of OUD patients to receive Narcan®		Target Population									
	Total Lake County population to establish naloxone public lock boxes		General Population									
3A. Public Safety	Total number of law enforcement officers to receive stigma reduction training		Workforce									
3B. Criminal Justice System	Total number of individuals released from jail with OUD		Intervention Population									
3D. Mental Health Counseling and Grief Support	Total Lake County population aged 12 years and older		General Population									
	Total number of opioid-related deaths		Intervention Population									
	Total number of counselors needed to deliver mental health and grief support		Intervention Population									
4A. Pregnant Women, New Mothers, and Infants	Total number of pregnant women eligible to receive universal prenatal screening		General Population									
	Total number of pregnant women with OUD		Intervention Population									
	Total number of infants diagnosed with NAS to receive medical care		Intervention Population									
4B. Adolescents and Young Adults	Total number of adolescents eligible to receive prevention programs		General Population									
	Proportion of adolescents to receive prevention programs		Target Population									
	Total number of adolescents to receive STB		Intervention Population									
	Total number of social workers needed		Intervention Population									
4C. Families and Children	Total number of children living with parents with OUD		Intervention Population									
	Total number of children in foster care due to parental opioid use		Intervention Population									
	Total number of children adopted due to parental opioid use		Intervention Population									
4D. Homeless and Housing Insecure Individuals	Total number of homeless individuals with OUD		Intervention Population									
ED Emergency Department; MAT Medications for Addiction Treatment; OUD Opioid Use Disorder; ACT Assertive Community Treatment; SPS Syringe Service Programs; HCV Hepatitis C Virus; STB Screen for Behavioral Health; NAS Neonatal Abstinence Syndrome; STB Screen for Behavioral Health; IVDU Intravenous Drug Use; HV Human Immunodeficiency Virus; NAS Neonatal Abstinence Syndrome; STB Screen for Behavioral Health; IVDU Intravenous Drug Use; HV Human Immunodeficiency Virus; NAS Neonatal Abstinence Syndrome; STB Screen for Behavioral Health												

Table 2. Intervention Population Trend Ratio by Year	
Year	Intervention Population Trend Ratio
2020 (baseline)	1.00
2021	0.96
2022	0.91
2023	0.87
2024	0.83
2025	0.79
2026	0.75
2027	0.73
2028	0.69
2029	0.66
2030	0.63
2031	0.60
2032	0.58
2033	0.55
2034	0.53
2035	0.50



#### 4C. Families and Children

	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<b>1. Support for children living with parents with OUD</b>																
[1] Total number of children living with parents with OUD																
[1]	1,143	1,092	1,043	996	951	909	868	829	792	756	722	690	659	629	601	
[2] Number of children eligible to receive socio-emotional support	548	523	500	477	456	435	416	397	379	362	346	330	316	301	288	
[3] Number of families with a parent with OUD	476	455	435	415	396	379	362	345	330	315	301	287	275	262	250	
[4] Number of families eligible to receive intensive parent-child interventions	228	218	208	199	190	181	173	165	158	151	144	138	131	126	120	
[5] Number of families eligible to receive peer/family mentoring services	228	218	208	199	190	181	173	165	158	151	144	138	131	126	120	
<b>2. Support for children in foster care</b>																
[6] Total number of children in foster care due to parental opioid use																
[6]	39	37	36	34	32	31	30	28	27	26	25	24	23	21	21	
[7] Number of children in foster care eligible to receive socio-emotional support	16	15	14	14	13	12	12	11	11	10	10	9	9	9	8	
[8] Number of foster families of children in foster care due to parental opioid use	16	16	15	14	14	13	12	12	11	11	10	10	9	9	9	
[9] Number of foster families eligible to receive intensive parent-child interventions	8	7	7	7	6	6	6	6	5	5	5	5	4	4	4	
[10] Number of foster families eligible to participate in family treatment counts	8	7	7	7	6	6	6	6	5	5	5	5	4	4	4	
<b>3. Support for adopted children and families</b>																
[11] Total number of children adopted due to parental opioid use																
[11]	5	5	4	4	4	4	4	3	3	3	3	3	3	3	3	
[12] Number of children adopted eligible to receive socio-emotional support	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	
[13] Number of adoptive families of children adopted due to parental opioid use	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	
[14] Number of adoptive families eligible to receive intensive parent-child interventions	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
[15] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50	

OUD Opioid Use Disorder

Costs Description		
[3] Prevention intervention cost per adolescent		
[4] STIR cost per adolescent		
[6] School social worker full-time equivalent (FTE) annual compensation		
Suggested Costs	Value	Source(s)
Prevention intervention cost per adolescent		
Cost of school-based prevention curriculum per student	\$52.00	Cost in 2008 dollars. Miller, T. and Hendrie, D. Substance Abuse Prevention Dollars and Cents: A Cost-Benefit Analysis, DHHS Pub. No. (SMA) 07-4298. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration, 2008.
STIR cost per adolescent	\$72.73	Cost in 2017 dollars. Ohio Medicaid reimbursement rate for codes G0396 and G0397. Ohio Department of Medicaid. <a href="https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services">https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services</a> .

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1A. Health Professional Education															
	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Academic detailing</u>															
[1] Total number of prescribers eligible to receive academic detailing in Lake County	929	940	952	964	976	988	1,001	1,013	1,026	1,039	1,052	1,065	1,078	1,091	1,105
[2] Proportion of prescribers to receive academic detailing	10.0%	9.6%	9.3%	8.9%	8.6%	8.2%	7.9%	7.5%	7.1%	6.8%	6.4%	6.1%	5.7%	5.4%	5.0%
[3] Total number of prescribers to receive academic detailing	93	91	88	86	84	81	79	76	73	70	68	65	62	58	55
[4] Total number of academic detailers needed	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<u>2. Continuing healthcare provider education</u>															
[5] Total number of prescribers eligible for continuing professional education	929	940	952	964	976	988	1,001	1,013	1,026	1,039	1,052	1,065	1,078	1,091	1,105
[6] Total continuing healthcare provider education hours	3,715	1,881	1,904	1,928	1,952	1,976	2,001	2,026	2,051	2,077	2,103	2,129	2,156	2,183	2,210
Notes	Input	Source(s)													
[1] Number of prescribers adjusted by annual employment growth rate starting in 2019															
Number of physicians and dentists	480	2019 data. Pediatricians are excluded. Health Resources and Services Administration. Area Health Resources Files. <a href="https://data.hrsa.gov/topics/health-workforce/ahrf">https://data.hrsa.gov/topics/health-workforce/ahrf</a> .													
Number of nurse practitioners	364	2019 data. Health Resources and Services Administration. Area Health Resources Files. <a href="https://data.hrsa.gov/topics/health-workforce/ahrf">https://data.hrsa.gov/topics/health-workforce/ahrf</a> .													
Number of physician assistants	62	2019 data. Health Resources and Services Administration. Area Health Resources Files. <a href="https://data.hrsa.gov/topics/health-workforce/ahrf">https://data.hrsa.gov/topics/health-workforce/ahrf</a> .													
Total number of prescribers	906	Sum of the number of physicians and dentists, nurse practitioners, and physician assistants.													
Prescribing population annual employment growth	1.2%	2018 data. Weighted average of physicians, nurse practitioners, and physician assistants annual employment growth rates. 2018-2028 10-year employment growth rates were converted to annual employment growth rates. Ohio Department of Job and Family Services. <a href="https://ohiolmi.com/portals/206/proj/Ohio_OJob_Outlook_2018-2028.pdf">https://ohiolmi.com/portals/206/proj/Ohio_OJob_Outlook_2018-2028.pdf</a> .													
[2] Yearly estimate from 10.0% in year 1 to 5.0% in year 15	Yearly Estimate	In the U.S., 10% of providers account for nearly 90% of opioid prescriptions. Thus, the top 10% opioid prescribers of the prescribing population will be targeted in the first year and the top 5% by year 15 of the abatement plan. Further described in paragraph #88 of expert witness report. Chang HY, Lyapustina T, Rutkow L, Daubresse M, Richey M, Faul M, Stuart EA, Alexander GC. Impact of Prescription Drug Monitoring Programs and Pill Mill Laws on High-Risk Opioid Prescribers: A Comparative Interrupted Time Series Analysis. Drug and Alcohol Dependence. 2016;165:1-8.													
[3] = [1] * [2]															
[4] = [3] / 300	300	Number of unique prescribers visited by a detailer per year. Each prescriber will be visited four times each year (once per calendar quarter) by a detailer. 250 work days per year, but approximately one-fifth of the detailer time would be administrative. 6 prescribers per day * 200 work days / 4 visits per year. Expert opinion.													
[5] = [1]		Same as number of prescribers.													
[6] = [5] * health professional education hours per year															
Number of hours in year 1	4	Informed by National Institute on Drug Abuse. Health Professions Education, CME/CE Activities. <a href="https://www.drugabuse.gov/nidamed-medical-health-professionals/health-professions-education/cme-ce-activities">https://www.drugabuse.gov/nidamed-medical-health-professionals/health-professions-education/cme-ce-activities</a> .													
Number of hours in subsequent years	2	Informed by National Institute on Drug Abuse. Health Professions Education, CME/CE Activities. <a href="https://www.drugabuse.gov/nidamed-medical-health-professionals/health-professions-education/cme-ce-activities">https://www.drugabuse.gov/nidamed-medical-health-professionals/health-professions-education/cme-ce-activities</a> .													
Costs Description															
[4] Pharmacist full-time equivalent (FTE) annual compensation (an academic detailer is typically a pharmacist)															
[6] Weighted average of physicians, dentists, nurse practitioners, and physician assistants median hourly wage															

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**18. Patient and Public Education**

Year													
2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035													
<u>1. Mass media campaigns</u>													
[1] Total Lake County population aged 12 years and older	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568
[2] Proportion of Lake County population to be targeted by media campaigns	85.0%	84.3%	83.6%	82.9%	82.1%	81.4%	80.7%	80.0%	79.3%	78.6%	77.9%	77.1%	76.4%
[3] Total Lake County population to be targeted by media campaigns	169,633	168,207	166,782	165,356	163,931	162,505	161,080	159,654	158,229	156,803	155,378	153,952	152,527
<b>Notes</b>	<b>Input</b>	<b>Source(s)</b>											
[1] All individuals aged 12 years and older residing in Lake County	199,568	2018 data. All individuals aged 12 years and older (87.3% in 2019 in Lake County). The Ohio Development Services Agency projects that the population of Lake County would be stable from 2020 (228,600 residents) through 2035 (228,550 residents). Given the stable population of the County, the 2020 population projection was used. (1) Ohio State Annual Estimates of the Resident Population by Single Year of Age and Sex: April 1, 2010 to July 1, 2019. U.S. Census Bureau, American Community Survey. <a href="https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html">https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html</a> . (2) Ohio Development Services Agency, Population Projections. <a href="https://development.ohio.gov/files/research/P6090.pdf">https://development.ohio.gov/files/research/P6090.pdf</a> .											
[2] Yearly estimate from 85.0% in year 1 to 75.0% in year 15	Yearly Estimate	Proportion of Lake County population to be reached by mass media campaigns per year: 85.0% in year 1 and 75.0% by year 15 of the abatement plan. Recommended by Centers for Disease Control and Prevention for an effective public health mass media campaign. King BA, Pechacek TF, Marlolis P. Centers for Disease Control and Prevention. Best Practices for Comprehensive Tobacco Control Programs—2014. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014. <a href="https://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm">https://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm</a> .											
[3] = [1] * [2]													
<b>Costs Description</b>													
[3] Mass media cost per capita													
<b>Suggested Costs</b>	<b>Value</b>	<b>Source(s)</b>											
The Real Cost campaign is a national tobacco public education campaign designed to prevent the initiation of cigarette smoking among youth aged 12 to 17 years. The Real Cost has appeared on national TV, radio, the Internet, and out-of-home displays, as well as in magazines and movie theaters. The central theme of the campaign is: "Every cigarette costs you something". MacMonagle AJ, Nonnemacher J, Duke JC, Farrelly MC, Zhao X, Delahanty JC, Smith AA, Rao P, Allen JA. Cost-Effectiveness Analysis of the Real Cost Campaign's Effect on Smoking Prevention. American Journal of Preventive Medicine. 2018;55:319-25.													
Campaign duration in months	24	While the campaign ran from 2013 to 2016, the intensive phase ran in 2014 and 2015.											
Campaign cost	\$205.3 M	Cost in 2014-2015 dollars for 24 months.											
Average cost per month	\$8.6 M	Campaign cost / Campaign duration in months.											
Campaign target population	271 M	National population age 12 years and older (average 2014-2015).											
Campaign cost per capita per year	\$0.38	Average cost per month / Campaign target population * 12 months.											

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**4B. Adolescents and Young Adults**

Year													
2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035													
<u>1. School-based prevention programs</u>													
[1] Total number of adolescents eligible to receive prevention programs	16,231	16,231	16,231	16,231	16,231	16,231	16,231	16,231	16,231	16,231	16,231	16,231	16,231
[2] Proportion of adolescents to receive prevention programs	50.0%	47.9%	45.7%	43.6%	41.4%	39.3%	37.1%	35.0%	32.9%	30.7%	28.6%	26.4%	24.3%
[3] Total number of adolescents to receive prevention programs	8,115	7,768	7,420	7,072	6,724	6,376	6,029	5,681	5,333	4,985	4,637	4,290	3,942
<u>2. Adolescents OUD screening</u>													
[4] Total number of adolescents to receive STIR	434	415	396	378	361	345	330	315	301	287	274	262	250
<u>3. School social workers</u>													
[5] Total number of public school students in Lake County	30,633	30,633	30,633	30,633	30,633	30,633	30,633	30,633	30,633	30,633	30,633	30,633	30,633
[6] Total number of social workers needed	8.4	8.0	7.6	7.3	7.0	6.6	6.3	6.1	5.8	5.5	5.3	5.0	4.8
[7] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55
OUD Opioid Use Disorder; STIR Screening, Treatment Initiation and Referral													
<b>Notes</b>	<b>Input</b>	<b>Source(s)</b>											
[1] All individuals aged 12 to 17 years old in Lake County	16,231	2018 data. All individuals aged 12 to 17 years old (7.1% in 2019 in Lake County). The Ohio Development Services Agency projects that the population of Lake County would be stable from 2020 (228,600 residents) through 2035 (228,550 residents). Given the stable population of the County, the 2020 population projection was used. (1) Ohio Development Services Agency, Population Projections. <a href="https://development.ohio.gov/files/research/P6090.pdf">https://development.ohio.gov/files/research/P6090.pdf</a> . (2) U.S. Census Bureau, American Community Survey.											
[2] Yearly estimate from 50.0% in year 1 to 20.0% in year 15	Yearly Estimate	Adolescent prevention programs should reach 50.0% of the adolescents in Lake County in year 1 and 20.0% by year 15. Expert opinion.											
[3] = [1] * [2]		2016-2018 data. All individuals aged 12 to 17 years in Lake County * Proportion of adolescents who reported current prescription opioid misuse. Estimated based on nonmedical use of pain relievers in the past year among individuals 12 to 17 years old (substate NSDUH, Ohio Boards 28, 43, and 67 which includes county of interest). Substance Abuse and Mental Health Services Administration, 2016-2018 National Survey on Drug Use and Health. Rockville, MD: Center for Behavioral Health Statistics and Quality.											
[4] = [1] * 2.8% * [5]	2.8%	<a href="https://www.samhsa.gov/data/sites/default/files/reports/rpt29376/NSDUHsubstateAgeGroupTabs2018/NSDUHsubstateAgeGroupTabs2018.pdf">https://www.samhsa.gov/data/sites/default/files/reports/rpt29376/NSDUHsubstateAgeGroupTabs2018/NSDUHsubstateAgeGroupTabs2018.pdf</a>											
[5] Total number of public school students in Lake County	30,633	<a href="https://nces.ed.gov/cd/schooldistrict/school_list.asp?Search1=&amp;InstName=&amp;SchoolID=&amp;Address=&amp;City=&amp;State=39&amp;Zip=&amp;Miles=&amp;County=Lake&amp;PhoneAreaCode=&amp;Phone=&amp;DistrictName=&amp;DistrictID=&amp;SchoolType=1&amp;SchoolType=3&amp;SchoolType=4&amp;SpecificSchlTypes=&amp;L1=&amp;H1Grade=&amp;L1Grade=&amp;H1Grade=1">https://nces.ed.gov/cd/schooldistrict/school_list.asp?Search1=&amp;InstName=&amp;SchoolID=&amp;Address=&amp;City=&amp;State=39&amp;Zip=&amp;Miles=&amp;County=Lake&amp;PhoneAreaCode=&amp;Phone=&amp;DistrictName=&amp;DistrictID=&amp;SchoolType=1&amp;SchoolType=3&amp;SchoolType=4&amp;SpecificSchlTypes=&amp;L1=&amp;H1Grade=&amp;L1Grade=&amp;H1Grade=1</a>											
[6] = [5] / 3,500 * [7]	3,500	Caseload of public school students per opioid specialized school social worker. Informed by the School Social Work Association of America (SSWAA) recommendation of one school social worker to 250 general education students. <a href="https://aab82939-3e7b-497d-8f30-a85373757e29.filesusr.com/ugd/426a18_20108ba1b744cada772fdabb79dfe.pdf">https://aab82939-3e7b-497d-8f30-a85373757e29.filesusr.com/ugd/426a18_20108ba1b744cada772fdabb79dfe.pdf</a> . (2) Expert opinion.											
[7] Retrieved from "Abatement Scaling" tab													

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Number of live births in Ohio	134,560	2019 data. Ohio Department of Health. Ohio Public Health Information Warehouse. <a href="http://publicapps.odh.ohio.gov/EDW/DataBrowser/Browse/OhioLiveBirths">http://publicapps.odh.ohio.gov/EDW/DataBrowser/Browse/OhioLiveBirths</a> .
Prevalence of OUD per 1,000 hospital deliveries in Ohio	15.1	Number of women with OUD at delivery / Total number of births in Ohio * 1,000
[3] = [2]		All pregnant women with OUD/new mothers with OUD should receive prenatal biopsychosocial services for one year, including intensive care coordination and support, given the complex challenges they face. Expert opinion.
[4] = Cumulative sum of [3] in the most recent 5 years (beginning year 2)		All new mothers with OUD should receive lower postpartum psychosocial services. The psychosocial services should last for a period of 5 years. Expert opinion.
[5] = [2] * 40.0%	40.0%	Housing services should be provided for a minimum of 12 months. Informed by (1) Brogly SB, Sala SK, Kelley E, Werler M, Regan E, Hernández-Díaz S. <i>Prenatal Treatment and Outcomes of Women with Opioid Use Disorder</i> . <i>Obstetrics &amp; Gynecology</i> . 2018;132(4):916-922. (2) Expert opinion.
[6] = [1] * 11.4 per 1,000 * [12]	11.4	Number of hospital live births in Lake County * Rate of NAS per 1,000 hospital deliveries.
Number of NAS hospitalizations per year	25.0	2014-2018 data. Average number of yearly hospitalizations for NAS in Lake County from 2014 to 2018. 2018 Ohio Neonatal Abstinence Syndrome County Report. <a href="https://odh.ohio.gov/wps/portal/gov/b396a983-fa4e-4333-929c-1e9722cb4c38/2018-NAS-County+Table.pdf?MOD=AJPERES&amp;CONVERT_TO=url&amp;CACHEID=ROOTWORKSPACE.Z18_M1HGGIK0N0J000Q09DDDDM3000-b396a983-fa4e-4333-929c-1e9722cb4c38-m-fUpd">https://odh.ohio.gov/wps/portal/gov/b396a983-fa4e-4333-929c-1e9722cb4c38/2018-NAS-County+Table.pdf?MOD=AJPERES&amp;CONVERT_TO=url&amp;CACHEID=ROOTWORKSPACE.Z18_M1HGGIK0N0J000Q09DDDDM3000-b396a983-fa4e-4333-929c-1e9722cb4c38-m-fUpd</a> .
[7] = [2] - [6]		Number of deliveries where the mother screens positive for opioids - Number of infants diagnosed with NAS in Lake County.
[8] = [6] + ([7] * 84.0%)	84.0%	Proportion of infants exposed to opioids but not diagnosed with NAS who should receive early intervention (age 0-5 years old). All infants diagnosed with NAS should receive early intervention (age 0-5 years old). Expert opinion.
[9] Cumulative sum of [8] until age 6 years old		Number of all infants diagnosed with NAS is used as a proxy for the number of infants exposed to opioids in utero but not diagnosed with NAS and number of infants diagnosed with NAS who need early intervention. Expert opinion.
[10] = [6] * 19.3% starting at age 6 years old	19.3%	Infants with NAS require special services and education starting at age 6 years old. (1) Expert opinion. (2) Informed by Fill MM, Miller AM, Wilkinson RH, Warren MD, Dunn JR, Schaffner W, Jones TF. <i>Educational Disabilities Among Children Born With Neonatal Abstinence Syndrome</i> . <i>Pediatrics</i> . 2018;142:e20180562.
[11] Cumulative sum of [10] starting at age 6 years old		
[12] Retrieved from "Abatement Scaling" tab		
<b>Costs Description</b>		
[1] Prenatal screening cost per woman		
[3] Prenatal psychosocial services cost per woman		
[4] Postpartum psychosocial services cost per woman		
[5] Housing services cost per mother		
[6] NAS medical costs per infant		
[9] Early intervention cost per child (age 0-5 years old)		
[11] Special education and psychosocial services cost per child (age 6-21 years old)		
<b>Suggested Costs</b>	<b>Value</b>	<b>Source(s)</b>
Prenatal screening cost per woman	\$63.50	Cost in 2017 dollars. Includes presumptive drug testing by instrumented chemistry analyzers (CPT Code H004B) and office/outpatient visit (CPT Code 99212). Ohio Department of Medicaid. <a href="https://medicaid.ohio.gov/Provider/FeeScheduleInformation/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services">https://medicaid.ohio.gov/Provider/FeeScheduleInformation/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services</a> .
<b>NAS medical costs per infant</b>		
Source #1	\$23,106	Cost in 2015 dollars. Loudin S, Werthammer J, Prunty L, Murray S, Shapiro JI, Davies TH. <i>A Management Strategy That Reduces NICU Admissions and Decreases Charges From the Front Line of the Neonatal Abstinence Syndrome Epidemic</i> . <i>Journal of Perinatology</i> . 2017;37:1108-11.
Source #2	\$24,341	Cost in 2016 dollars. <i>NAS hospitalization (ICD-10 Code P96.1 neonatal withdrawal symptoms from maternal use of drugs of addiction)</i> . U.S. Department of Health & Human Services, Agency for Healthcare Research and Quality. HCUPNet. <a href="https://hcupnet.ahrq.gov/#query=eylBTkfMWVNjU19UWVBFlpbkFlJX000XswiT1VUQ09NRV9NRUFTVJFlUy6WylPTV90VU1CRVlLCJPTV95QVRFliwT01ftG9TliwT01fSENliiwiT01fSENpiwT01fQUliiwiT01fQUNPl0sliiFQVITljbllISxzwMTYXSwiUFJ1TkJNUExFX095X0FMTCl6WylQJQV9QlQkU0Q0lQkTEUiXSwiQ0FUlRjdQlQVRJTD5FVRQRlRS6WylDVF9lQlQ0QMEQXlSwlQ1RlPSUNEMTBEljpbllJ3MjU2l0siklBVEFTRVRfU09VUlkFljbllRTX05JUyldf==">https://hcupnet.ahrq.gov/#query=eylBTkfMWVNjU19UWVBFlpbkFlJX000XswiT1VUQ09NRV9NRUFTVJFlUy6WylPTV90VU1CRVlLCJPTV95QVRFliwT01ftG9TliwT01fSENliiwiT01fSENpiwT01fQUliiwiT01fQUNPl0sliiFQVITljbllISxzwMTYXSwiUFJ1TkJNUExFX095X0FMTCl6WylQJQV9QlQkU0Q0lQkTEUiXSwiQ0FUlRjdQlQVRJTD5FVRQRlRS6WylDVF9lQlQ0QMEQXlSwlQ1RlPSUNEMTBEljpbllJ3MjU2l0siklBVEFTRVRfU09VUlkFljbllRTX05JUyldf==</a> .
Source #3	\$37,584	Cost in 2016 dollars. Milliren CE, Gupta M, Graham DA, Melvin P, Jorina M, Ozonoff A. <i>Hospital Variation in Neonatal Abstinence Syndrome Incidence, Treatment Modalities, Resource Use, and Costs Across Pediatric Hospitals in the United States, 2013 to 2016</i> . <i>Hospital Pediatrics</i> . 2018;8:15-20.

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<b>Monument Analytics</b> A Health Care Consultancy		
<b>1C. Safe Storage and Drug Disposal</b>		
<b>Year</b>		
2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035		
<u>1. Drug take-back collection programs</u>		
[1] Total Lake County population	228,600	2018 data. The Ohio Development Services Agency projects that the population of Lake County would be stable from 2020 (228,600 residents) through 2035 (228,550 residents). Given the stable population of the County, the 2020 population projection was used. Ohio Development Services Agency, Population Projections. <a href="https://development.ohio.gov/files/research/P6090.pdf">https://development.ohio.gov/files/research/P6090.pdf</a> .
[2] Proportion of medications collected that are opioids	10.0%	9.6% 9.3% 8.9% 8.6% 8.2% 7.9% 7.5% 7.1% 6.8% 6.4% 6.1% 5.7% 5.4% 5.0%
<b>Notes</b>	<b>Input</b>	<b>Source(s)</b>
[1] All individuals residing in Lake County	228,600	2018 data. The Ohio Development Services Agency projects that the population of Lake County would be stable from 2020 (228,600 residents) through 2035 (228,550 residents). Given the stable population of the County, the 2020 population projection was used. Ohio Development Services Agency, Population Projections. <a href="https://development.ohio.gov/files/research/P6090.pdf">https://development.ohio.gov/files/research/P6090.pdf</a> .
[2] Yearly estimate from 10.0% in year 1 to 5.0% in year 15	Yearly Estimate	Proportion of opioids out of all medications collected at take-back programs: 10.0% in year 1 and 5.0% in year 15. Informed by medication take-back days in rural South Carolina. 13.3% (proportion of potentially abused medications returned out of all medications returned) * 65.0% (proportion of opioids returned out of all potentially abused medications returned) = 8.6%. Shealy KM, Ritter MS, Wyatt AS, Eagerton DH. Trends in Potentially Abused Medications Returned During Medication Take-Back Days. <i>Journal of the American Pharmacists Association</i> . 2019;59:575-8.
<b>Costs Description</b>		
[1] Cost of opioids disposal per capita per year * [2]		
<b>Suggested Costs</b>	<b>Value</b>	<b>Source(s)</b>
Source #1: King County, WA		King County Department of Public Health. <a href="https://www.kingcounty.gov/depts/health/board-of-health/regulations/secure-medicine/~media/depts/health/board-of-health/documents/securemed/DefiningCostsResponsibility.ashx">https://www.kingcounty.gov/depts/health/board-of-health/regulations/secure-medicine/~media/depts/health/board-of-health/documents/securemed/DefiningCostsResponsibility.ashx</a> .
Operating cost per year	\$532,275	Cost in 2011 dollars.
County population	1,974,200	2011 data. U.S. Census. <a href="https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html">https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html</a> .
Cost per capita per year	\$0.27	Operating cost per year / County population.
Source #2: Alameda County, CA		Dangi-Garimella S. Safe Disposal of Prescription Medications Faces a Cost Barrier. AJMC. 2016 May 04: <a href="https://www.ajmc.com/newsroom/safe-disposal-of-prescription-medications-the-cost-barrier">https://www.ajmc.com/newsroom/safe-disposal-of-prescription-medications-the-cost-barrier</a> .
Operating cost per year	\$330,000	Cost in 2015 dollars.
County population	1,634,538	2015 data. U.S. Census. <a href="https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html">https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html</a> .
Cost per capita per year	\$0.20	Operating cost per year / County population.

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**1D. Community Prevention and Resiliency**

	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035														
<u>1. Community resiliency coalition staffing</u>																														
[1] Total number of directors needed		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5														
[2] Total number of community organizers needed		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4														
<u>2. Community resiliency coalition space</u>																														
[3] Total number of community spaces		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0														
<u>3. Community resiliency coalition funding</u>																														
[4] Total Lake County population aged 12 years and older		199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568														
<b>Notes</b>																														
[1] = Total population in Lake County / 500,000	Input	0.5	I assume 1 full-time equivalent (FTE) director per 500,000 people to ensure adequate county coverage. Expert opinion.																											
[2] = [1] * 3		3	I assume 3 FTE community organizers per director. Expert opinion.																											
[3] = [1] * 1		1	I assume 1 community physical space to host forums, seminars, training sessions, and community meetings. Expert opinion.																											
[4] Total Lake County population aged 12 and older	Yearly Estimate	Retrieved from tab "1B. Public Education", input [1].																												
<b>Costs Description</b>																														
[1] Director full-time equivalent (FTE) annual compensation																														
[2] Community organizer FTE annual compensation																														
[3] Community space with a seating capacity of 50 people																														
[4] Total Lake County population aged 12 and older to be targeted by community resiliency initiatives * Cost per capita per year																														
<b>Suggested Costs</b>																														
Community-based prevention programs cost per capita	Yearly Estimate	Cost in 2012 dollars. Represents cost per resident. Costs should be \$10.00 for the first year and then decrease by 10% for each subsequent year. Honeycutt AA, Khavjou OA, Bradley C, Neuwahl S, Hoerger TJ, Bellard D, Cash AJ. Intervention Costs From Communities Putting Prevention to Work. Preventing Chronic Disease. 2016;13:E98.																												

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**4A. Pregnant Women, New Mothers, and Infants**

	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Prenatal OUD screening</u>																
[1] Total number of pregnant women eligible to receive universal prenatal screening		2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192
<u>2. Prenatal and postpartum psychosocial services</u>																
[2] Total number of pregnant women with OUD		32	30	29	28	26	25	24	23	22	21	20	19	18	17	17
[3] Number of pregnant women with OUD/new mothers with OUD eligible to receive prenatal psychosocial services		32	30	29	28	26	25	24	23	22	21	20	19	18	17	17
[4] Number of new mothers with OUD to receive postpartum psychosocial services		0	32	62	91	118	144	138	132	126	120	115	110	105	100	96
<u>3. Prenatal and postpartum housing services</u>																
[5] Number of pregnant women with OUD/new mothers with OUD eligible to receive housing services		13	12	12	11	11	10	10	9	9	8	8	8	7	7	7
<u>4. Interventions for infants exposed to opioids in utero</u>																
[6] Total number of infants diagnosed with NAS to receive medical care		24	23	22	21	20	19	18	17	17	16	15	14	14	13	13
[7] Total number of infants exposed to opioids but not diagnosed with NAS		8	7	7	7	6	6	6	5	5	5	5	4	4	4	4
[8] Number of children eligible to receive early intervention (age 0-5 years old)		30	29	28	26	25	24	23	22	21	20	19	18	17	16	16
[9] Total number of children eligible to receive early intervention (age 0-5 years old)		30	59	87	114	139	163	156	149	142	136	129	124	118	113	108
[10] Number of children eligible to receive special education and psychosocial services (age 6-21 years old)		0	0	0	0	0	0	5	4	4	4	4	4	3	3	3
[11] Total number of children eligible for special education and psychosocial services (age 6-21 years old)		0	0	0	0	0	0	5	9	13	17	21	25	28	32	35
[12] Intervention Population Trend Ratio		0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50
OUD Opioid Use Disorder; NAS Neonatal Abstinence Syndrome																
<b>Notes</b>																
[1] Number of hospital live births in Lake County	Input	2,192	2019 data. All pregnant women will be eligible for prenatal screening. (1) U.S. Census Bureau, County Population Totals and Components of Change: 2010-2018. <a href="https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html">https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html</a> . (2) Substance Abuse and Mental Health Services Administration. Clinical Guidance for Treating Pregnant and Parenting Women With Opioid Use Disorder and Their Infants. HHS Publication No. (SMA) 18-5054. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2018.													
[2] = [1] * 15.1 per 1,000 * [12]	Input	33.1	Number of hospital live births in Lake County * Prevalence of OUD per 1,000 hospital deliveries 2016-2018 data. Average number of women per year who are diagnosed with OUD at delivery between 2016 and 2018. Ohio Department of Health. 2018 Neonatal Abstinence Syndrome Report. <a href="https://odh.ohio.gov/wps/portal/gov/230fd880-662d-42e4-9f00-0a0e70953ce9/NAS+2018+Table+REVISED+12-13-2019.pdf?MOD=AJPERES&amp;CONVERT_TO=url&amp;CACHEID=ROOTWORKSPACE.Z18_M1HGK0N0J00Q09DDDM300-0-230fd880-662d-42e4-9f00-0a0e70953ce9-mY0MaqN">https://odh.ohio.gov/wps/portal/gov/230fd880-662d-42e4-9f00-0a0e70953ce9/NAS+2018+Table+REVISED+12-13-2019.pdf?MOD=AJPERES&amp;CONVERT_TO=url&amp;CACHEID=ROOTWORKSPACE.Z18_M1HGK0N0J00Q09DDDM300-0-230fd880-662d-42e4-9f00-0a0e70953ce9-mY0MaqN</a>													
Pregnant women with OUD at delivery in Ohio	Input	2,031														

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### 3D. Mental Health Counseling and Grief Support

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Mental health counseling</u>															
[1] Total Lake County population aged 12 years and older	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568	199,568
[2] Total number of individuals with chronic pain	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712	40,712
[3] Total number of individuals to receive mental health counseling	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364	9,364
<u>2. Grief support</u>															
[4] Total number of opioid-related deaths	69	66	63	60	57	55	52	50	48	45	43	41	40	38	36
[5] Total number of bereaved family members to receive grief support	165	158	151	144	137	131	125	120	114	109	104	100	95	91	87
<u>3. Mental health counselors</u>															
[6] Total number of counselors needed to deliver mental health and grief support	6.4	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
[7] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50
<b>Notes</b>															
[1] All individuals aged 12 years and older residing in Lake County	Input														
[1]	Retrieved from tab "1B. Public Education", Input [1].														
[2] = [1] * 20.4% * [7]	20.4%														
[3] = [2] * 23.0%	23.0%														
[4] Number of opioid-related deaths in Lake County * [7]	72														
[5] = [4] * 2.4	2.4														
[6] = ([3] + [5]) / 1,500	1,500														
[7] Retrieved from "Abatement Scaling" tab															
<b>Costs Description</b>															
[6] Mental health counselor full-time equivalent annual compensation															

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### 1E. Harm Reduction

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Syringe service programs (SSPs)</u>															
[1] Total number of opioid injection drug users	1,333	1,273	1,216	1,161	1,109	1,059	1,012	966	923	882	842	804	768	734	701
[2] Proportion of opioid injection drug users reached by SSPs	30.0%	33.2%	36.4%	39.6%	42.9%	46.1%	49.3%	52.5%	55.7%	58.9%	62.1%	65.4%	68.6%	71.8%	75.0%
[3] Total number of opioid injection drug users reached by SSPs	400	423	443	460	475	488	499	507	514	520	523	526	527	527	526
<u>2. Drug checking machines</u>															
[4] Total number of drug checking machines needed	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<u>3. Fentanyl testing strips</u>															
[5] Total number of opioid injection drug users	1,333	1,273	1,216	1,161	1,109	1,059	1,012	966	923	882	842	804	768	734	701
[6] Proportion of opioid injection drug users to receive fentanyl testing strips	30.0%	33.2%	36.4%	39.6%	42.9%	46.1%	49.3%	52.5%	55.7%	58.9%	62.1%	65.4%	68.6%	71.8%	75.0%
[7] Total number of opioid injection drug users to receive fentanyl testing strips	400	423	443	460	475	488	499	507	514	520	523	526	527	527	526
[8] Total number of fentanyl testing strips needed per day	400	423	443	460	475	488	499	507	514	520	523	526	527	527	526
[9] Total number of fentanyl testing strips needed per year	145,956	154,340	161,578	168,045	173,515	178,156	182,030	185,197	187,713	189,631	190,997	191,859	192,259	192,236	191,828
[10] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50
<b>SSPs Syringe Service Programs</b>															
<b>Notes</b>															
[1] Intravenous opioid use population per year in Lake County * Adjustment for intravenous opioid use underestimation * [10]	738														
[2] 2016-2018 data. 0.37% of Lake County individuals aged 12 years and older used heroin in the past year based on 2016-2018 survey results (substate NSDUH Ohio Boards 28, 43, and 67 which includes county of interest). 0.37% * Lake County 2018 population aged 12 and older. Substance Abuse and Mental Health Services Administration, 2016-2018 National Survey on Drug Use and Health (NSDUH) Substate Age Group Tables. Rockville, MD: Center for Behavioral Health Statistics and Quality. <a href="https://www.samhsa.gov/data/report/2016-2018-nsduh-substate-region-estimates-tables">https://www.samhsa.gov/data/report/2016-2018-nsduh-substate-region-estimates-tables</a> .															
[3] 2016-2018 data. The NSDUH past month heroin use estimate in Lake County is conservatively estimated to be no less than 1.9 times higher to account for NSDUH underestimation and exclusion of homeless people who do not use shelters and institutionalized populations. Informed by the difference in the National RAND corporation estimated monthly chronic heroin use population and National NSDUH past month heroin use population in 2016. (1) Midgette G, Davenport S, Caulkins JP, Kilmer B. What America's Users Spend on Illegal Drugs, 2006-2016. Published 2019. <a href="https://www.rand.org/pubs/research_reports/RR3140.html">https://www.rand.org/pubs/research_reports/RR3140.html</a> . (2) Substance Abuse and Mental Health Services Administration, 2010-2019 National Survey on Drug Use and Health. Rockville, MD: Center for Behavioral Health Statistics and Quality. (3) Expert opinion.															
[2] Yearly estimate from 30.0% in year 1 to 75.0% in year 15	Yearly Estimate														
[3] = [1] * [2]															
[4] Number of drug checking machines needed	8.8	One machine for every four police departments (19 police departments in Lake County) and two machines for every SSP. Equipment investment is only needed in year 1 of the abatement plan. Informed by Tl L, Tobias S, Lysyshyn M, Laing R, Nosova E, Choi J, Arredondo J, McCrae K, Tupper K, Wood E. Detecting Fentanyl Using Point-Of-Care Drug Checking Technologies: A Validation Study. Drug and Alcohol Dependence. 2020;212:108006.													
Number of police departments	19	Retrieved from tab "3A. Public Safety", Input [1].													
Number of SSPs	2	Assuming one permanent site and one mobile van. Expert opinion.													

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[5] = [1]	Same as number of opioid injection drug users in Lake County.	
[6] = [2]	Same as proportion of opioid injection drug users reached by SSPs.	
[7] = [5] * [6]		
[8] = [7] * 1	1	Number of fentanyl testing strips needed per person per day. Majority of heroin users reported daily injection nationally. Colledge S, Leung J, Larney S, Peacock A, Grebely J, Hickman M, Cunningham E, Trickey A, Stone J, Vickerman P, Degenhardt L. Frequency of Injecting Among People Who Inject Drugs: A Systematic Review and Meta-Analysis. International Journal of Drug Policy. 2020;76:102619.
[9] = [8] * 365 days	365	
[10] Retrieved from "Abatement Scaling" tab		
<b>Costs Description</b>		
[3] SSP cost per client		
[4] Cost per drug checking machine for year 1 + recurring maintenance per year (clinical laboratory technician median annual compensation)		
[9] Cost per fentanyl testing strip		
<b>Suggested Costs</b>	<b>Value</b>	<b>Source(s)</b>
SSP cost per client	\$774.30	Cost in 2016 dollars. A medium-size suburban SSP is defined as an SSP that serves approximately 1,250 clients per year and location in a geographic area with 50,000-1.0 million people. Teshale EH, Asher A, Aslam MV, Augustine R, Duncan E, Rose-Wood A, Ward J, Mermin J, Owusu-Edusei K, Dietz PM. Estimated Cost of Comprehensive Syringe Service Program in the United States. PloS one. 2019;14(4).
Cost per drug checking machine	\$20,000	Cost in 2018 dollars. Gary Gately. (2018) How Drug Checking Could Prevent Fentanyl Overdoses. Hopkins Bloomberg Public Health Magazine. <a href="https://magazine.jhsph.edu/2018/how-drug-checking-could-prevent-fentanyl-overdoses">https://magazine.jhsph.edu/2018/how-drug-checking-could-prevent-fentanyl-overdoses</a> .
Cost per fentanyl testing strip	\$1.00	Cost in 2020 dollars. Next Naloxone. <a href="https://www.naloxoneforall.org/fentanyl">https://www.naloxoneforall.org/fentanyl</a> .

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3C. Vocational Training, Education, and Job Placement																									
Year																									
2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035																									
<b>1. Vocational training programs</b>																									
[1] Total number of individuals with OUD to receive treatment	2,267	2,243	2,216	2,187	2,156	2,124	2,090	2,055	2,019	1,981	1,944	1,905	1,866	1,827	1,788										
[2] Total number of individuals with OUD to receive vocational training	1,109	1,097	1,084	1,069	1,054	1,038	1,022	1,005	987	969	950	932	913	893	874										
<b>OUD Opioid Use Disorder</b>																									
<b>Notes</b>	<b>Input</b>	<b>Source(s)</b>																							
[1] Number of individuals with OUD in Lake County to receive treatment	Yearly Estimate	Retrieved from tab "2B. OUD Treatment", input [3].																							
[2] = [1] * 48.9%	48.9%	2018 data. Proportion of individuals unemployed among individuals admitted to treatment for opioid related admissions in Ohio in 2018. Substance Abuse and Mental Health Services Administration. 2018 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality.																							
<b>Costs Description</b>																									
[2] Vocational training cost per person																									
<b>Suggested Costs</b>	<b>Value</b>	<b>Source(s)</b>																							
Vocational training cost per person	\$2,765	Cost in 2017 dollars. Employment counseling and job training with paid work experience in the community. Washington State Institute for Public Policy. The Effectiveness of Reentry Programs for Incarcerated Persons: Findings for the Washington Statewide Reentry Council. <a href="http://www.wsipp.wa.gov/ReportFile/1667/Wsipp_The-Effectiveness-of-Reentry-Programs-for-Incarcerated-Persons-Findings-for-the-Washington-Statewide-Reentry-Council_Report.pdf">http://www.wsipp.wa.gov/ReportFile/1667/Wsipp_The-Effectiveness-of-Reentry-Programs-for-Incarcerated-Persons-Findings-for-the-Washington-Statewide-Reentry-Council_Report.pdf</a> .																							

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Suggested Costs	Value	Source(s)
Reentry cost per person	\$2,434	Cost in 2017 dollars. Employment counseling and job training (transitional reentry from incarceration into the community). Washington State Institute for Public Policy. The Effectiveness of Reentry Programs for Incarcerated Persons: Findings for the Washington Statewide Reentry Council. <a href="http://www.wsipp.wa.gov/ReportFile/1667/Wsipp_The-Effectiveness-of-Reentry-Programs-for-Incarcerated-Persons-Findings-for-the-Washington-Statewide-Reentry-Council_Report.pdf">http://www.wsipp.wa.gov/ReportFile/1667/Wsipp_The-Effectiveness-of-Reentry-Programs-for-Incarcerated-Persons-Findings-for-the-Washington-Statewide-Reentry-Council_Report.pdf</a> .

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1F. Surveillance, Evaluation, and Leadership														
Year														
2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035														
<u>1. Opioid Abatement Coordinating Unit</u>														
[1] Total number of directors needed	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
[2] Total number of managers needed	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
[3] Total number of data scientists needed	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
[4] Total number of community liaisons needed	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
[5] Total number of staff assistants needed	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
<b>Notes</b>														
[1] = Total population in Lake County / 500,000	0.5	I assume 1 full-time equivalent (FTE) director per 500,000 people to ensure adequate county coverage. Expert opinion.												
[2] = [1] * 1	1	I assume 1 FTE manager per director. Expert opinion.												
[3] = [1] * 4	4	I assume 4 FTE data scientists per director. Expert opinion.												
[4] = [1] * 1	1	I assume 1 FTE community liaison per director. Expert opinion.												
[5] = [1] * 1	1	I assume 1 FTE staff assistant per director. Expert opinion.												
<b>Costs Description</b>														
[1] Director full-time equivalent (FTE) annual compensation														
[2] Manager FTE annual compensation														
[3] Data scientist FTE annual compensation														
[4] Community liaison FTE annual compensation														
[5] Staff assistant FTE annual compensation														

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**2A. Connecting Individuals to Care**

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Helpline</u>															
[1] Total number of helpline staff members	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
<u>2. Peer recovery coaches</u>															
[2] Total number of peer recovery coaches needed	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
<u>3. Transportation assistance</u>															
[3] Total number of patients in need of transportation assistance for outpatient OUD treatment	388	411	433	454	474	493	511	527	542	557	570	582	593	603	611
[4] Total number of transportation vouchers needed for patients receiving outpatient OUD treatment per year	20,159	21,366	22,518	23,613	24,650	25,628	26,546	27,405	28,205	28,946	29,628	30,253	30,821	31,334	31,793
[5] Total number of patients in need of transportation assistance for intensive outpatient OUD treatment	171	181	191	200	209	217	225	232	239	245	251	256	261	265	269
[6] Total number of transportation vouchers needed for patients receiving intensive outpatient OUD treatment per year	35,507	37,634	39,663	41,592	43,418	45,141	46,759	48,272	49,681	50,985	52,187	53,288	54,289	55,192	56,000
[7] Total number of transportation vouchers needed per year	55,666	58,999	62,180	65,204	68,068	70,768	73,305	75,677	77,886	79,931	81,815	83,541	85,110	86,526	87,793
<u>4. Quick Response Teams (QRTs)</u>															
[8] Total number of opioid-related ED visits and hospitalizations	338	323	308	295	281	269	257	245	234	224	214	204	195	186	178
[9] Total number of QRTs needed	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
[10] Total number of addiction counselors for QRTs	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
[11] Total number of first responders for QRTs	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
[12] Total number of peer recovery coaches for QRTs	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<u>5. Bridge programs</u>															
[13] Total number of EDs to establish Bridge programs	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
<b>[14] Intervention Population Trend Ratio</b>	<b>0.96</b>	<b>0.91</b>	<b>0.87</b>	<b>0.83</b>	<b>0.79</b>	<b>0.76</b>	<b>0.73</b>	<b>0.69</b>	<b>0.66</b>	<b>0.63</b>	<b>0.60</b>	<b>0.58</b>	<b>0.55</b>	<b>0.53</b>	<b>0.50</b>

OUD Opioid Use Disorder; QRT Quick Response Team; ED Emergency Department

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**3B. Criminal Justice System**

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Opioid drug courts</u>															
[1] Total number of opioid drug courts participants	54	87	139	153	168	185	204	224	246	271	298	328	361	397	436
<u>2. Reentry and reintegration</u>															
[2] Total number of individuals released from jail/prison with OUD	189	180	172	164	157	150	143	137	131	125	119	114	109	104	99
<u>3. Transitional housing for newly released</u>															
[3] Total number of individuals released from jail/prison with OUD eligible to receive transitional housing	57	54	52	49	47	45	43	41	39	37	36	34	33	31	30
<b>[4] Intervention Population Trend Ratio</b>	<b>0.96</b>	<b>0.91</b>	<b>0.87</b>	<b>0.83</b>	<b>0.79</b>	<b>0.76</b>	<b>0.73</b>	<b>0.69</b>	<b>0.66</b>	<b>0.63</b>	<b>0.60</b>	<b>0.58</b>	<b>0.55</b>	<b>0.53</b>	<b>0.50</b>

OUD Opioid Use Disorder

Notes	Input	Source(s)
[1] Number of opioid drug courts participants per year	34	Number of Lake County treatment court participants that report heroin or prescription opioids as their primary drug of choice. 2016 data: 150,000 drug courts participants nationally * 0.07% (proportion of Lake County, 228,600, in 2020 of the total 2019 U.S. Census population, 328,239,523). National Drug Court Month Toolkit Stories Worth Telling. National Association of Drug Court Professionals. May 2021. <a href="https://www.nadcp.org/wp-content/uploads/2021/04/NDCM-Toolkit-2021-4-6.pdf">https://www.nadcp.org/wp-content/uploads/2021/04/NDCM-Toolkit-2021-4-6.pdf</a> .
Proportion of drug courts population with opioid as the primary substance of no medical use	32.5%	2016 data. Based on national average of 34% (suburban drug courts) and 31% (rural drug courts). Marlowe, Douglas B, Carolyn D. Hardin, and Carson L. Fox. Painting the Current Picture: A National Report on Drug Courts and Other Problem-Solving Courts in the United States. National Drug Court Institute. <a href="https://www.ncji.org/wp-content/uploads/2016/05/painting-the-current-picture-2016.pdf">https://www.ncji.org/wp-content/uploads/2016/05/painting-the-current-picture-2016.pdf</a> . Published Jun 2016.
Opioid drug courts capacity growth rate, years 1 to 3	60.0%	Opioid drug court capacity will be increased by 60.0% each year from year 1 through year 3. Expert opinion.
Opioid drug courts capacity growth rate, years 4 to 15	10.0%	Opioid drug court capacity will be increased by 10.0% each year from year 4 through year 15. Expert opinion.
[2] Number of individuals released from jail/prison with OUD * [4]	198	Number of individuals released from jail/prison per year * Percentage of individuals in jail or prison with OUD.
Number of individuals released from jail/prison per year	302	2015 data. Number of individuals released from jail/prison that were committed by Lake County. Ohio Department of Rehabilitation & Correction. Releases in CY 2015 by County of Admission. <a href="https://drc.ohio.gov/bureau-of-research">https://drc.ohio.gov/bureau-of-research</a> .
Percentage of individuals in jail/prison with OUD	65.4%	2019 data. 65.4% of inmates in Ohio screened positive for buprenorphine and opiates. Ohio Department of Rehabilitation & Correction. 2019 Annual Report. <a href="https://www.drc.ohio.gov/Portals/0/Annual%20report%20final%20ODRC.pdf">https://www.drc.ohio.gov/Portals/0/Annual%20report%20final%20ODRC.pdf</a> .
[3] = [2] * 30.0%	30.0%	Proportion of individuals released from jail/prison with OUD needing transitional housing per year. Transitional housing services should be provided for a minimum of 9 months. Informed by (1) National Alliance on Mental Illness. Reentry After A Period Of Incarceration. <a href="https://www.nami.org/Find-Support/Living-with-a-Mental-Health-Condition/Reentry-After-a-Period-of-Incarceration">https://www.nami.org/Find-Support/Living-with-a-Mental-Health-Condition/Reentry-After-a-Period-of-Incarceration</a> . (2) Expert opinion.
[4] Retrieved from "Abatement Scaling" tab		
Costs Description		
[1] Drug court cost per participant (excluding treatment cost)		
[2] Reentry cost per person		
[3] Transitional housing cost per person		

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3A. Public Safety																
	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Law Enforcement Assisted Diversion (LEAD)</u>																
[1] Total number of LEAD programs to be established for police departments		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	
<u>2. Specialized Opioid Investigators</u>																
[2] Total number of specialized opioid investigators		1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.0	
<u>3. Stigma reduction training</u>																
[3] Total number of law enforcement officers to receive stigma reduction training		699	698	697	697	696	696	695	694	694	693	692	692	691	690	
[4] Total number of hours for stigma reduction training		2,096	2,094	2,092	2,090	2,089	2,087	2,085	2,083	2,081	2,079	2,077	2,075	2,073	2,071	
<u>5] Intervention Population Trend Ratio</u>		0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	
LEAD Law Enforcement Assisted Diversion																
<b>Notes</b>	<b>Input</b>	<b>Source(s)</b>														
[1] Number of police and sheriff departments to establish LEAD	4.8	Every 4 police departments will share a LEAD program. Expert opinion.														
Number of police departments in Lake County	19	USA COPS. The Nation's Law Enforcement Site. <a href="https://www.usacops.com/oh/lake.html">https://www.usacops.com/oh/lake.html</a> .														
[2] = Number of specialized opioid investigators * [5]	2	(1) Informed by Baltimore (5 detectives) <a href="https://www.washingtonpost.com/local/public-safety/baltimore-homicide-detectives-to-begin-investigating-drug-overdoses/2017/05/02/90d7f66-2f52-11e7-9534-00e4656c22aa_story.html?utm_term=.4cc511878227">https://www.washingtonpost.com/local/public-safety/baltimore-homicide-detectives-to-begin-investigating-drug-overdoses/2017/05/02/90d7f66-2f52-11e7-9534-00e4656c22aa_story.html?utm_term=.4cc511878227</a> . Published May 2, 2017 and Boston (13 detectives) <a href="https://www.bostonglobe.com/metro/2016/03/31/new-boston-police-opioid-unit-focuses-treatment-not-just-arrests/6sLSoQd2vBwccHMBuXEAaK/story.html">https://www.bostonglobe.com/metro/2016/03/31/new-boston-police-opioid-unit-focuses-treatment-not-just-arrests/6sLSoQd2vBwccHMBuXEAaK/story.html</a> . Published Mar 31, 2016. (2) Expert opinion.														
[3] Number of law enforcement officers to receive stigma reduction training, adjusted by annual employment growth rate starting in 2019																
Number of police officers	614	Retrieved from tab "2D. Workforce Expansion", Input [6] notes.														
Number of correctional officers	86	2019 data. Lake County Sheriff's Office. Lake County Corrections Annual Report, 2019. <a href="https://www.lakecountyohio.gov/Portals/34/PDF%20Files/Corrections/2019%20Corrections%20Report.pdf">https://www.lakecountyohio.gov/Portals/34/PDF%20Files/Corrections/2019%20Corrections%20Report.pdf</a> .														
Number of law enforcement officers	700	Sum of the number of police officers and correctional officers.														
Law enforcement annual employment growth rate	-0.1%	Weighted average of police officers and correctional officers annual employment growth rates. 2018-2028 10-year employment growth rates were converted to annual employment growth rates. Ohio Department of Job and Family Services. <a href="https://ohiolm.com/portals/206/Pro/Ohio/Ohio_Outlook_2018-2028.pdf">https://ohiolm.com/portals/206/Pro/Ohio/Ohio_Outlook_2018-2028.pdf</a> .														
[4] = [3] * 3 hours	3	A 3-hour long stigma reduction training should be provided annually. The Harm Reduction Coalition Understanding Drug-Related Stigma Tools for Better Practice and Social Change. <a href="https://harmreduction.org/wp-content/uploads/2012/02/stigma-facilitators.pdf">https://harmreduction.org/wp-content/uploads/2012/02/stigma-facilitators.pdf</a> .														
[5] Retrieved from "Abatement Scaling" tab																
<b>Costs Description</b>																
[1] Cost per LEAD program																
[2] Investigator full-time equivalent (FTE) annual compensation																
[4] Weighted average of police officers and correctional officers median hourly wage																

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3B. Opioid Treatment																
	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. Opioid Treatment Programs (OTPs)</u>																
[1] Number of full-time equivalent (FTE) helpline staff	3	Three 8-hour shifts to maintain 24/7 hotline coverage by licensed clinical social worker-level staff and/or crisis intervention specialists. Informed by Substance Abuse and Mental Health Services Administration. National Helpline. <a href="https://www.samhsa.gov/find-help/national-helpline">https://www.samhsa.gov/find-help/national-helpline</a> .														
[2] Total number of peer recovery coaches needed per year	10	Total sum of number of peer recovery coaches needed for EDs, SSPs, recovery houses, and OTPs.														
Number of EDs in Lake County	2	2020 data. State of Ohio Office of Research. Ohio County Profiles – Lake County. <a href="https://www.development.ohio.gov/files/research/C1044.pdf">https://www.development.ohio.gov/files/research/C1044.pdf</a> .														
Number of peer recovery coaches needed per ED	2	Each ED should have 2 FTE peer recovery coaches. Expert opinion.														
Number of syringe service programs (SSPs) in Lake County	2	Retrieved from tab "1E. Harm Reduction", input [4] notes.														
Number of peer recovery coaches needed per SSP	2	Each SSP should have 2 FTE peer recovery coaches. Expert opinion.														
Number of recovery houses	4	2020 data. Transitional Housing Network. <a href="https://www.transitionalhousing.org/state/ohio">https://www.transitionalhousing.org/state/ohio</a> .														
Number of peer recovery coaches needed per recovery house	0.25	Every 4 recovery houses should have 1 FTE peer coach. Expert opinion.														
Number of opioid treatment programs (OTPs)	1	2020 data. Substance Abuse and Mental Health Services Administration. Opioid Treatment Program Directory. <a href="https://dpt2.samhsa.gov/treatment/directory.aspx">https://dpt2.samhsa.gov/treatment/directory.aspx</a> .														
Number of peer recovery coaches needed per OTP	1	Each OTP should have 1 FTE peer coach. Expert opinion.														
<u>2. Opioid Use Disorder (OUD) Treatment</u>																
[3] Number of individuals with OUD in outpatient treatment settings	Yearly Estimate	Retrieved from tab "2B. OUD Treatment", input [9].														
[4] = [3] * 1 voucher per week * 52 weeks	52	One voucher per week. Center for Substance Abuse Treatment. Substance Abuse: Administrative Issues in Outpatient Treatment. Treatment Improvement Protocol (TIP) Series 46. DHHS Publication No. (SMA) 06-4151. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2006. <a href="https://store.samhsa.gov/product/TIP-46-Substance-Abuse-Administrative-Issues-in-Outpatient-Treatment/SMA12-4151?refer=from_search_result">https://store.samhsa.gov/product/TIP-46-Substance-Abuse-Administrative-Issues-in-Outpatient-Treatment/SMA12-4151?refer=from_search_result</a> .														
[5] Number of individuals with OUD in intensive outpatient treatment settings	Yearly Estimate	Retrieved from tab "2B. OUD Treatment", input [10].														
[6] = [5] * 4 vouchers per week * 52 weeks	208	Four vouchers per week. Center for Substance Abuse Treatment. Substance Abuse: Clinical Issues in Intensive Outpatient Treatment. Treatment Improvement Protocol (TIP) Series 47. DHHS Publication No. (SMA) 06-4182. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2006. <a href="https://store.samhsa.gov/product/TIP-47-Substance-Abuse-Clinical-Issues-in-Intensive-Outpatient-Treatment/SMA13-4182">https://store.samhsa.gov/product/TIP-47-Substance-Abuse-Clinical-Issues-in-Intensive-Outpatient-Treatment/SMA13-4182</a> .														
[7] = [4] + [6]																
[8] Number of opioid-related ED visits and hospitalizations in Lake County * [14]	354	2019 data. Ohio Hospital Association. OHA Data Release: Opioid Overdoses. <a href="https://ohiohospitals.org/Patient-Safety-Quality/Statewide-Initiatives/Opioid-Initiative/OHA-Overdose-Data-Sharing-Program">https://ohiohospitals.org/Patient-Safety-Quality/Statewide-Initiatives/Opioid-Initiative/OHA-Overdose-Data-Sharing-Program</a> .														
[9] = [8] / 972	972	QRT caseload is based on an average of 972 overdose referrals per year (81 referrals per month). Informed by (1) Cover2 Resources, Summit County QRT. <a href="https://cover2.org/programs/quick-response-teams/">https://cover2.org/programs/quick-response-teams/</a> . (2) Huntington Quick Response Team. <a href="https://www.opioidlibrary.org/wp-content/uploads/2019/08/QRT-Larreca-Cox.pdf">https://www.opioidlibrary.org/wp-content/uploads/2019/08/QRT-Larreca-Cox.pdf</a> .														
[10] = [9]		Each QRT should include an addiction counselor. Expert opinion.														
[11] = [9]		Each QRT should include a first responder. Expert opinion.														
[12] = [9]		Each QRT should include a peer recovery coach. Expert opinion.														
[13] Number of EDs in Lake County	2	Retrieved from input [2] notes.														
[14] Retrieved from "Abatement Scaling" tab																
<b>Costs Description</b>																
[1] Crisis intervention specialist full-time equivalent (FTE) annual compensation																
[2] Peer recovery coach FTE annual compensation																
[7] Cost per transportation voucher (round trip)																
[10] Addiction counselor FTE annual compensation																
[11] First responder FTE annual compensation																
[12] Peer recovery coach FTE annual compensation																

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[13] Bridge Program cost per ED		
Suggested Costs	Value	Source(s)
Bridge Program cost per ED	\$173,333	Cost in 2018 dollars. California Bridge Program available funding for a Star Site for 12 months. Public Health Institute. <a href="http://www.phi.org/wp-content/uploads/migration/uploads/files/CA%20Bridge%20Program_SITE%20SELECTION%20RFA_16Nov2018.pdf">http://www.phi.org/wp-content/uploads/migration/uploads/files/CA%20Bridge%20Program_SITE%20SELECTION%20RFA_16Nov2018.pdf</a> .

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Costs Description		
Suggested Costs	Value	Source(s)
[3] Weighted average of firefighters, EMTs and paramedics, and police officers median hourly wage		
[4] Narcan® dose cost for first responders		
[6] Generic injectable naloxone dose cost		
[10] Take-home kit cost		
[11] Narcan® dose cost		
[13] Naloxone public lock box (excluding Narcan®) cost		
[14] Narcan® dose cost		
Suggested Costs	Value	Source(s)
First responders Nasal spray (Narcan®) single use spray cost	\$37.50	Cost in 2020 dollars. ADAPT Pharma. <a href="https://www.narcan.com/first-responders/what-is-narcan-nasal-spray/">https://www.narcan.com/first-responders/what-is-narcan-nasal-spray/</a> .
Generic injectable naloxone cost per dose	\$11.21	Cost in 2021 dollars. NALOXONE 4 MG/10 ML VIAL. National Average Drug Acquisition Cost. Updated April 6,2021. <a href="https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-/a4y5-998d">https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-/a4y5-998d</a> .
Nasal spray (Narcan®) single-use spray cost	\$59.94	Cost in 2021 dollars. NARCAN 4 MG NASAL SPRAY. National Average Drug Acquisition Cost. Updated February 17, 2021. <a href="https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-/a4y5-998d">https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-/a4y5-998d</a> .
Take-home kit cost	\$8.19	Cost in 2021 dollars. Emergency Medical Products. <a href="https://www.buyemp.com/">https://www.buyemp.com/</a> .
Naloxone public lock box without naloxone cost	\$275.00	Cost in 2021 dollars. Naloxbox generally stocked with the Narcan® formulation of naloxone. This cost is exclusive to the Naloxbox without medication. <a href="https://naloxbox.org/products/naloxbox-standard">https://naloxbox.org/products/naloxbox-standard</a> .

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Notes	Input	Source(s)
[1] Number of first responders in Lake County		Retrieved from tab "2D. Workforce Expansion", input [6].
[2] = [1] for year 1 and newly hired first responders for the subsequent years	Yearly Estimate	All first responders should receive training in the first year. Only newly hired first responders will receive training in subsequent years.
First responders average turnover rate	25.0%	Informed by American Ambulance Association. AAA/Avesta 2019 Ambulance Industry Employee Turnover Study. <a href="https://ambulance.org/wp-content/uploads/2019/07/AAA-Avesta-2019-EMS-Employee-Turnover-Study-Final.pdf">https://ambulance.org/wp-content/uploads/2019/07/AAA-Avesta-2019-EMS-Employee-Turnover-Study-Final.pdf</a> . Published July 2019.
[3] = [2] * 3 hours	3	Duration of training. Informed by Professional Education Systems Institute (PESI). Trauma-Informed First Responder Training. <a href="https://www.pesi.com/store/detail/26756">https://www.pesi.com/store/detail/26756</a> .
[4] = [1] * 3 doses	3	Number of Narcan® doses per first responder per year. Bureau of Justice Assistance. National Training and Technical Assistance Center, Law Enforcement Naloxone Toolkit. <a href="https://bjatc.bja.ojp.gov/tools/naloxone/Naloxone-Background">https://bjatc.bja.ojp.gov/tools/naloxone/Naloxone-Background</a> .
[5] Number of opioid-related ED visits and hospitalizations in Lake County	Yearly Estimate	Retrieved from tab "2A. Connecting Individuals", input [8].
[6] = [5] * 2 doses per opioid-related ED visit or hospitalization	2	Number of generic injectable naloxone doses per opioid-related ED visit or hospitalization per year. Informed by Massey J, Kilkenny M, Batdorf S, Sanders SK, Ellison D, Halpin J, Gladden RM, Bixler D, Haddy L, Gupta R. Opioid Overdose Outbreak—West Virginia, August 2016. Morbidity and Mortality Weekly Report. 2017;66:975.
[7] Number of individuals with OUD	Yearly Estimate	Retrieved from tab "2B. OUD Treatment", input [1].
[8] Yearly estimate from 20.0% in year 1 to 50.0% in year 15	Yearly Estimate	Informed by (1) Samuels EA, Baird J, Yang ES, Melio MJ. Adoption and Utilization of an Emergency Department Naloxone Distribution and Peer Recovery Coach Consultation Program. Academic Emergency Medicine. 2019;26:160-73. (2) Centers for Disease Control and Prevention. CDC Guideline for Prescribing Opioids for Chronic Pain. <a href="https://www.montcopa.org/DocumentCenter/View/12973/CDCGuideline_At-A-Glance?bidId=">https://www.montcopa.org/DocumentCenter/View/12973/CDCGuideline_At-A-Glance?bidId=</a> .
[9] = [7] * [8]		
[10] = [9] * 1 naloxone kit per OUD patient	1	Number of naloxone kits per OUD patient per year. Each kit should consist of a bag that can hold the Narcan® doses, 2 CPR face shields, and relevant educational materials. Samuels EA. Emergency Department Naloxone Distribution: A Rhode Island Department of Health, Recovery Community, and Emergency Department Partnership to Reduce Opioid Overdose Deaths. Rhode Island Medical Journal. 2014;97:38-39.
[11] = [9] * 2 doses per OUD patient	2	Number of Narcan® doses per OUD patient per year. Samuels EA. Emergency Department Naloxone Distribution: A Rhode Island Department of Health, Recovery Community, and Emergency Department Partnership to Reduce Opioid Overdose Deaths. Rhode Island Medical Journal. 2014;97:38-39.
[12] Total Lake County population	Yearly Estimate	Retrieved from tab "1C. Drug Disposal", input [1].
[13] = [12] / 1,000	1,000	Population per one naloxone box per city. Informed by a similar recommendation by the American Heart Association for having 1 automated external defibrillator (AED) per 1,000 person-years. American Heart Association. International CPR and ECC Guidelines Part 4: The Automated External Defibrillator: Key Link in the Chain of Survival. Circulation. 2000;102 (Supplement 1).
[14] = [13] * 2 doses per naloxone box	2	Number of Narcan® doses per public lock box. Informed by Capraro GA, Rebola CB. The NaloxBox Program in Rhode Island: A Model for Community-Access Naloxone. American Journal of Public Health. 2018;108:1649-1651.
Replacement frequency of Narcan® doses of naloxone public lock boxes	Every 3 years	Narcan® for public lock boxes is replaced every three years (shelf-life of naloxone). Emergent BioSolutions Announces FDA Approval of NARCAN Nasal Spray Shelf Life Extension to 36 Months. <a href="https://www.globenewswire.com/news-release/2020/08/17/2079086/0/en/Emergent-BioSolutions-Announces-FDA-Approval-of-NARCAN-naloxone-HCl-Nasal-Spray-Shelf-Life-Extension-to-36-Months.html">https://www.globenewswire.com/news-release/2020/08/17/2079086/0/en/Emergent-BioSolutions-Announces-FDA-Approval-of-NARCAN-naloxone-HCl-Nasal-Spray-Shelf-Life-Extension-to-36-Months.html</a> .

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## 2B. Treatment for Opioid Use Disorder

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. ASAM levels of care for OUD treatment</u>															
[1] Total number of individuals with OUD	5,668	5,413	5,170	4,938	4,716	4,505	4,303	4,109	3,925	3,749	3,580	3,420	3,266	3,120	2,980
[2] Proportion of individuals with OUD to receive treatment*	40.0%	41.4%	42.9%	44.3%	45.7%	47.1%	48.6%	50.0%	51.4%	52.9%	54.3%	55.7%	57.1%	58.6%	60.0%
[3] Total number of individuals with OUD to receive treatment	2,267	2,243	2,216	2,187	2,156	2,124	2,090	2,055	2,019	1,981	1,944	1,905	1,866	1,827	1,788
[4] Proportion of individuals with OUD in treatment to receive MAT	30.0%	32.1%	34.3%	36.4%	38.6%	40.7%	42.9%	45.0%	47.1%	49.3%	51.4%	53.6%	55.7%	57.9%	60.0%
[5] Total number of individuals with OUD in treatment to receive MAT	680	721	760	797	832	865	896	925	952	977	1,000	1,021	1,040	1,057	1,073
[6] Total number of individuals with OUD in treatment to receive MAT-buprenorphine	412	437	460	483	504	524	543	560	577	592	606	619	630	641	650
[7] Total number of individuals with OUD in treatment to receive MAT-methadone	224	238	251	263	274	285	296	305	314	322	330	337	343	349	354
[8] Total number of individuals with OUD in treatment to receive MAT-naloxetone	44	46	49	51	53	55	57	59	61	63	64	65	67	68	69
[9] Total number of individuals with OUD in outpatient treatment settings	388	411	433	454	474	493	511	527	542	557	570	582	593	603	611
[10] Total number of individuals with OUD in intensive outpatient treatment settings	171	181	191	200	209	217	225	232	239	245	251	256	261	265	269
[11] Total number of individuals with OUD in rehab/residential treatment settings	82	87	91	96	100	104	107	111	114	117	120	122	125	127	129
[12] Total number of individuals with OUD in inpatient treatment settings	40	43	45	47	49	51	53	55	56	58	59	60	61	62	63
<u>2. OUD treatment in detention facilities/jails/prisons</u>															
Population estimates for this category are included in "1. ASAM levels of care for OUD treatment"															
<u>3. OUD treatment for pregnant women and new mothers</u>															
Population estimates for this category are included in "1. ASAM levels of care for OUD treatment"															
<u>4. OUD treatment for homeless and housing insecure individuals</u>															
Population estimates for this category are included in "1. ASAM levels of care for OUD treatment"															
<u>5. OUD treatment for adolescents</u>															
Population estimates for this category are included in "1. ASAM levels of care for OUD treatment"															
<u>6. Assertive Community Treatment (ACT)</u>															
[13] Proportion of individuals to receive ACT	10.0%	9.6%	9.3%	8.9%	8.6%	8.2%	7.9%	7.5%	7.1%	6.8%	6.4%	6.1%	5.7%	5.4%	5.0%
[14] Total number of individuals eligible to receive ACT each year	68	70	71	71	71	70	69	68	66	64	62	59	57	54	
[15] Total number of individuals to receive ACT	68	138	140	142	142	141	140	137	134	131	126	121	116	110	
[16] Total number of ACT teams needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[17] Total number of ACT team leaders needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[18] Total number of psychiatrists needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[19] Total number of psychiatrist nurses needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[20] Total number of addiction counselors needed	1.4	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.6	2.5	2.4	2.3	2.2	
[21] Total number of peer recovery coaches or peer navigators needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[22] Total number of program assistants needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[23] Total number of social workers needed	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	
[24] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50

ASAM American Society of Addiction Medicine; OUD Opioid Use Disorder; MAT Medications for Addiction Treatment; \* Proportion of individuals with OUD in treatment at any given month during the year; ACT Assertive Community Treatment

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Notes	Input	Source(s)
[1] Number of individuals with OUD in Lake County * [24]	5,934	2019 data. Past 12-month OUD. Estimate provided by Dr. Katherine Keyes.
[2] Yearly estimate from 40.0% in year 1 to 60.0% in year 15	Yearly Estimate	Based on 2018 Treatment Episode Data Set (TEDS) and 2018 National Survey on Drug Use and Health (NSDUH), approximately 20-30% of individuals with OUD were in treatment at some point in the past 12 months nationally. The World Health Organization (WHO) recommends a 40% minimum target OUD treatment coverage as a benchmark for high treatment coverage. (1) Williams AR, Nunes EV, Bisaga A, Lewis FR, Olfson M. Development of a Cascade of Care for Responding to the Opioid Epidemic. The American Journal of Drug and Alcohol Abuse. 2019;45:1-0. (2) Substance Abuse and Mental Health Services Administration, 2018 National Survey on Drug Use and Health. Rockville, MD: Center for Behavioral Health Statistics and Quality. (3) WHO, UNODC, UNAIDS Technical Guide for Countries to Set Targets for Universal Access to HIV Prevention, Treatment and Care for Injecting Drug Users, 2012 Revision. <a href="https://apps.who.int/iris/bitstream/handle/10665/77969/9789241504379_eng.pdf?sequence=1">https://apps.who.int/iris/bitstream/handle/10665/77969/9789241504379_eng.pdf?sequence=1</a> .
[3] = [1] * [2]		
[4] Yearly estimate from 30.0% in year 1 to 60.0% in year 15	Yearly Estimate	Based on 2017 Ohio-specific TEDS data. 24.5% of individuals who received treatment for OUD received MAT. Substance Abuse and Mental Health Services Administration. 2017 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality.
[5] = [3] * [4]		
[6] = [5] * 60.6%	60.6%	2018 data. Buprenorphine utilization among individuals with OUD in treatment receiving MAT nationally in 2018. Substance Abuse and Mental Health Services Administration, 2018 National Survey on Drug Use and Health. Rockville, MD: Center for Behavioral Health Statistics and Quality.
[7] = [5] * 33.0%	33.0%	2018 data. Methadone utilization among individuals with OUD in treatment receiving MAT nationally in 2018. Substance Abuse and Mental Health Services Administration, 2018 National Survey on Drug Use and Health. Rockville, MD: Center for Behavioral Health Statistics and Quality.
[8] = [5] * 6.4%	6.4%	2018 data. Naltrexone utilization among individuals with OUD in treatment receiving MAT nationally in 2018. Substance Abuse and Mental Health Services Administration, 2018 National Survey on Drug Use and Health. Rockville, MD: Center for Behavioral Health Statistics and Quality.
[9] = [3] * 57.0%	57.0%	Proportion of individuals with OUD receiving care in outpatient treatment settings. Informed by average 2014-2018 Ohio-specific TEDS data. (1) Substance Abuse and Mental Health Services Administration. 2014-2018 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality. (2) Expert opinion.
[10] = [3] * 25.1%	25.1%	Proportion of individuals with OUD receiving care in intensive outpatient treatment settings. Informed by average 2014-2018 Ohio-specific TEDS data. (1) Substance Abuse and Mental Health Services Administration. 2014-2018 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality. (2) Expert opinion.
[11] = [3] * 12.0%	12.0%	Proportion of individuals with OUD receiving care in rehab/residential treatment settings. Informed by average 2014-2018 Ohio-specific TEDS data. (1) Substance Abuse and Mental Health Services Administration. 2014-2018 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality. (2) Expert opinion.
[12] = [3] * 5.9%	5.9%	Proportion of individuals with OUD receiving care in inpatient treatment settings. Informed by average 2014-2018 Ohio-specific TEDS data. (1) Substance Abuse and Mental Health Services Administration. 2014-2018 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality. (2) Expert opinion.
[13] Yearly estimate from 10.0% in year 1 to 5.0% in year 15	Yearly Estimate	A subset of individuals with OUD who receive MAT are also eligible to receive Assertive Community Treatment (ACT). Informed by: (1) Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> . (2) Expert opinion.
[14] = [5] * [13]		
[15] = [14] in year one and sum of current year and previous year in subsequent years	Yearly Estimate	Though ACT services are time-unlimited, we continue services for 2 years. Informed by: Huz S, Thorming H, White CN, Fang L, Smith BT, Radigan M, Dixon LB. Time in Assertive Community Treatment: A Statewide Quality Improvement Initiative to Reduce Length of Participation. Psychiatric Services. 2017;38:539-541.
[16] = [15] / 100		Number of ACT teams needed.
Number of clients per ACT team	100	An interdisciplinary team of 8 to 12 professionals serve 100 clients. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[17] Total number of ACT team leaders needed = 1 * [16]	1	One full-time equivalent (FTE) mental health professional to act as ACT team lead. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .

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2E. Distributing Naloxone and Providing Training																
	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<u>1. First responders training</u>																
[1] Total number of first responders in Lake County eligible to receive training		1,257	1,258	1,258	1,259	1,260	1,261	1,262	1,263	1,264	1,264	1,265	1,266	1,267	1,268	1,269
[2] Total number of first responders in Lake County to receive training		1,257	315	315	316	316	316	316	317	317	317	317	317	318	318	318
[3] Total number of hours for first responder training		3,770	946	946	947	948	948	949	950	950	951	952	952	953	954	954
<u>2. Naloxone for first responders</u>																
[4] Total number of Narcan® doses for first responders		3,770	3,773	3,775	3,778	3,780	3,783	3,786	3,788	3,791	3,793	3,796	3,799	3,801	3,804	3,807
<u>3. Naloxone for EDs</u>																
[5] Number of opioid-related ED visits and hospitalizations in Lake County		338	323	308	295	281	269	257	245	234	224	214	204	195	186	178
[6] Total number of generic injectable naloxone doses for EDs		676	646	617	589	563	537	513	490	468	447	427	408	390	372	355
<u>4. Naloxone for high-risk patients</u>																
[7] Total number of OUD patients eligible for Narcan® distribution		5,668	5,413	5,170	4,938	4,716	4,505	4,303	4,109	3,925	3,749	3,580	3,420	3,266	3,120	2,980
[8] Proportion of OUD patients to receive Narcan®		20.0%	22.1%	24.3%	26.4%	28.6%	30.7%	32.9%	35.0%	37.1%	39.3%	41.4%	43.6%	45.7%	47.9%	50.0%
[9] Total number of OUD patients to receive Narcan®		1,134	1,199	1,256	1,305	1,348	1,384	1,414	1,438	1,458	1,473	1,483	1,490	1,493	1,493	1,490
[10] Total number of kits for OUD patients		1,134	1,199	1,256	1,305	1,348	1,384	1,414	1,438	1,458	1,473	1,483	1,490	1,493	1,493	1,490
[11] Total number of Narcan® doses for OUD patients		2,267	2,397	2,511	2,610	2,695	2,767	2,827	2,877	2,916	2,945	2,967	2,980	2,986	2,986	2,980
<u>5. Naloxone public lock boxes</u>																
[12] Total Lake County population to establish naloxone public lock boxes		228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	228,600	
[13] Total number of naloxone public lock boxes		229	0	0	0	0	0	0	0	0	0	0	0	0	0	
[14] Total number of Narcan® doses needed for public lock boxes		457	0	0	457	0	0	457	0	0	457	0	0	457	0	

ED Emergency Department; OUD Opioid Use Disorder

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Costs Description		
[3] MAT recruitment consultant (typically a nurse practitioner) full-time equivalent (FTE) annual compensation		
[5] Medical social worker FTE annual compensation		
[10] Compassion fatigue interventions cost per professional		
[13] Pain treatment specialist FTE annual compensation		
Suggested Costs	Value	Source(s)
Compassion fatigue interventions cost per professional		
Source #1	\$523.00	Cost in 2019 dollars. \$1 million / 637 first responders / 3 years. City of Huntington Compass Programs. <a href="https://compasshuntington.com/what-is-compass/">https://compasshuntington.com/what-is-compass/</a> .
Source #2	\$575.00	Cost in 2020 dollars. Center for Mindful Self-Compassion. <a href="https://centerformsc.org/lomsc/">https://centerformsc.org/lomsc/</a> .
Source #3	\$495.00	Cost in 2020 dollars. Duke Integrative Medicine. Mindfulness Based Stress Reduction. <a href="https://dukeintegrativemedicine.org/programs-training/public/mindfulness-based-stress-reduction/">https://dukeintegrativemedicine.org/programs-training/public/mindfulness-based-stress-reduction/</a> .

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[18] Total number of psychiatrists needed = 1 * [16]	1	One FTE psychiatrist is needed per ACT team. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[19] Total number of psychiatric nurses needed = 1 * [16]	1	One FTE psychiatric nurse is needed per ACT team. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[20] Total number of addiction counselors needed = 2 * [16]	2	Two FTE addiction counselors are needed per ACT team. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[21] Total number of peer recovery coaches or peer navigators needed = 1 * [16]	1	One FTE peer recovery coach or peer navigator is needed per ACT team. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[22] Total number of program assistants needed = 1 * [16]	1	One FTE program assistant is needed per ACT team. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[23] Total number of social workers needed = 1 * [16]	1	One FTE social worker is needed per ACT team. Assertive Community Treatment (ACT) Evidence-Based Practices (EBP) Kit. Substance Abuse and Mental Health Services Administration. U.S. Department of Health & Human Services. <a href="https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344">https://store.samhsa.gov/product/Assertive-Community-Treatment-ACT-Evidence-Based-Practices-EBP-KIT/SMA08-4344</a> .
[24] Retrieved from "Abatement Scaling" tab		
Costs Description		
[6] Buprenorphine cost per person per month * 12 months		
[7] Methadone cost per person per month * 12 months		
[8] Naltraxone cost per person per month * 12 months		
[9] Outpatient treatment average cost per month * 12 months		
[10] Intensive outpatient treatment average cost per month * 12 months		
[11] Residential treatment average cost per month * 12 months		
[12] Inpatient treatment average cost per month * 12 months		
[17] Licensed clinical social worker full-time equivalent (FTE) annual compensation		
[18] Psychiatrist FTE annual compensation		
[19] Psychiatrist nurse FTE annual compensation		
[20] Addiction counselor FTE annual compensation		
[21] Peer recovery coach or peer navigator FTE annual compensation		
[22] Program assistant FTE annual compensation		
[23] Social worker FTE annual compensation		
Suggested Costs	Value	Source(s)
ASAM levels of care treatment costs		
Outpatient treatment average cost per month	\$3,048	Cost in 2017 dollars. Code H0006 with a comprehensive program of nine hours of treatment per week and excludes medication cost. (1) American Society of Addiction Medicine. <a href="https://www.asam.org/docs/default-source/education-docs/ohio-medicaid-slides.pdf?sfvrsn=f5d97ec2_2">https://www.asam.org/docs/default-source/education-docs/ohio-medicaid-slides.pdf?sfvrsn=f5d97ec2_2</a> . (2) Ohio Department of Medicaid. <a href="https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services">https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services</a> .
Intensive outpatient treatment average cost per month	\$4,064	Cost in 2017 dollars. Code H0006 with a comprehensive program of twelve hours of treatment per week and excludes medication cost. (1) American Society of Addiction Medicine. <a href="https://www.asam.org/docs/default-source/education-docs/ohio-medicaid-slides.pdf?sfvrsn=f5d97ec2_2">https://www.asam.org/docs/default-source/education-docs/ohio-medicaid-slides.pdf?sfvrsn=f5d97ec2_2</a> . (2) Ohio Department of Medicaid. <a href="https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services">https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services</a> .

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Residential treatment average cost per month	\$4,577	Cost in 2017 dollars. Code H2034. Excludes medication cost. (1) Ohio Department of Medicaid. <a href="https://www.caresource.com/documents/medicaid-oh-policy-reimburse-py-0137-20190625/">https://www.caresource.com/documents/medicaid-oh-policy-reimburse-py-0137-20190625/</a> . (2) Ohio Department of Medicaid. <a href="https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services">https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services</a> .
Inpatient treatment average cost per month	\$5,714	Cost in 2017 dollars. Code H2036. Excludes medication cost. (1) Ohio Department of Medicaid. <a href="https://www.caresource.com/documents/medicaid-oh-policy-reimburse-py-0137-20190625/">https://www.caresource.com/documents/medicaid-oh-policy-reimburse-py-0137-20190625/</a> . (2) Ohio Department of Medicaid. <a href="https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services">https://medicaid.ohio.gov/Provider/FeeScheduleandRates/SchedulesandRates#1682653-outpatient-hospital-behavioral-health-services</a> . (3) Average length of inpatient stay in Ohio (18.6 days) informed by 2018 Ohio-specific TEDS-D data. Substance Abuse and Mental Health Services Administration. 2017 Treatment Episode Data Set (TEDS). Rockville, MD: Center for Behavioral Health Statistics and Quality. Remaining days in the month calculated from residential treatment cost.
<b>OUD treatment drug costs</b>		
<b>Buprenorphine cost per person per month</b>		
Unit	2 mg	
Unit cost	\$0.46	Cost in 2021 dollars. National Average Drug Acquisition Cost. Updated April 6, 2021. <a href="https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d">https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d</a> .
Dosage	12 mg/day	
Cost per month	\$82.80	
Monthly dispensing fee	\$10.56	Cost in 2020 dollars. Average of tiered professional dispensing fee. Medicaid Covered Outpatient Prescription Drug Reimbursement Information by State. Updated December 2020. <a href="https://www.medicaid.gov/medicaid/prescription-drugs/state-prescription-drug-resources/drug-reimbursement-information/index.html">https://www.medicaid.gov/medicaid/prescription-drugs/state-prescription-drug-resources/drug-reimbursement-information/index.html</a> .
<b>Total cost per month</b>	<b>\$93.36</b>	
<b>Methadone cost per person per month</b>		
Unit	5 mg	
Unit cost	\$0.12	Cost in 2021 dollars. National Average Drug Acquisition Cost. Updated April 6, 2021. <a href="https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d">https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d</a> .
Dosage	60 mg/day	
Cost per month	\$43.20	
Monthly dispensing fee	\$10.56	Cost in 2020 dollars. Average of tiered professional dispensing fee. Medicaid Covered Outpatient Prescription Drug Reimbursement Information by State. Updated December 2020. <a href="https://www.medicaid.gov/medicaid/prescription-drugs/state-prescription-drug-resources/drug-reimbursement-information/index.html">https://www.medicaid.gov/medicaid/prescription-drugs/state-prescription-drug-resources/drug-reimbursement-information/index.html</a> .
<b>Total cost per month</b>	<b>\$53.76</b>	
<b>Methadone cost per person per month</b>		
Unit	10 mg	
Unit cost	\$0.10	Cost in 2021 dollars. National Average Drug Acquisition Cost. Updated April 6, 2021. <a href="https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d">https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d</a> .
Dosage	60 mg/day	
Cost per month	\$18.00	
Monthly dispensing fee	\$10.56	Cost in 2020 dollars. Average of tiered professional dispensing fee. Medicaid Covered Outpatient Prescription Drug Reimbursement Information by State. Updated December 2020. <a href="https://www.medicaid.gov/medicaid/prescription-drugs/state-prescription-drug-resources/drug-reimbursement-information/index.html">https://www.medicaid.gov/medicaid/prescription-drugs/state-prescription-drug-resources/drug-reimbursement-information/index.html</a> .
<b>Total cost per month</b>	<b>\$28.56</b>	
<b>Naltrexone cost per person per month</b>		
Unit	380 mg	Monthly intramuscular injection.
Unit cost	\$1,340	Cost in 2021 dollars. National Average Drug Acquisition Cost. Updated April 6, 2021. <a href="https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d">https://data.medicaid.gov/Drug-Pricing-and-Payment/NADAC-National-Average-Drug-Acquisition-Cost-a4y5-998d</a> .
Dosage	1	
Monthly drug administration cost (CPT Code 96372)	\$13.64	Cost in 2021 dollars. Therapeutic, prophylactic, or diagnostic injection; subcutaneous or intramuscular. Center for Medicare and Medicaid Services. Physician Fee Schedule Search. Updated January 20, 2021. <a href="https://www.cms.gov/medicare/physician-fee-schedule/search?Y=0&amp;T=0&amp;HT=0&amp;CT=2&amp;H1=96372&amp;C=113&amp;M=1">https://www.cms.gov/medicare/physician-fee-schedule/search?Y=0&amp;T=0&amp;HT=0&amp;CT=2&amp;H1=96372&amp;C=113&amp;M=1</a> .
<b>Total cost per month</b>	<b>\$1,354</b>	

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Notes	Input	Source(s)
[1] Number of prescribers in Lake County	Yearly Estimate	Retrieved from tab "1A. Professional Education", input [1].
[2] = [1] * 10.0%	10.0%	Proportion of prescribers in Lake County that will be to be targeted by MAT recruitment consultants starting in year 1 and through year 5 of the plan. Expert opinion.
[3] = [2] / 500	500	Number of unique prescribers visited by a MAT recruitment consultant per year. Each prescriber will be visited twice in a given year by a MAT recruitment consultant. 250 work days per year, but approximately one-fifth of the consultant's time would be administrative. 5 prescribers per day * 200 work days / 2 visits per year = 500 prescribers per year. Expert opinion.
[4] Number of opioid-related ED visits and hospitalizations in Lake County	Yearly Estimate	Retrieved from tab "2A. Connecting Individuals", input [8].
[5] = [4] / 250	250	The average opioid-related emergency department visit requires approximately 8 hours of a medical social worker's time and a medical social worker will typically work 2,000 hours per year, resulting in an average caseload of 250 cases per medical social worker. Expert opinion.
[6] Number of first responders adjusted by annual employment growth rate starting in 2020		
Number of firefighters	380	2020 data. U.S. Fire Administration. <a href="https://apps.usfa.fema.gov/registry/download">https://apps.usfa.fema.gov/registry/download</a> .
Number of emergency medical technicians (EMTs) and paramedics	262	2020 data. Estimate scaled to reflect the population of Lake County relative to Ohio overall. Ohio Department of Public Safety. Active Certification Totals. <a href="https://www.ems.ohio.gov/links/ems_cert_total.pdf">https://www.ems.ohio.gov/links/ems_cert_total.pdf</a> .
Number of police officers	614	2019 data. Ohio Department of Public Safety. <a href="https://www.octs.ohio.gov/links/Ohio-CollaborativeReport2019.pdf">https://www.octs.ohio.gov/links/Ohio-CollaborativeReport2019.pdf</a> .
First responders population	1,256	Sum of the number of firefighters, EMTs and paramedics, and police officers.
First responders annual employment growth rate	0.1%	Weighted average of firefighters, EMTs and paramedics, and police officers annual employment growth rates. 2018-2028 Ohio Job Outlook Employment Projections. 10-year employment growth rates were converted to annual employment growth rates. Ohio Department of Job and Family Services. <a href="https://ohiolmi.com/portals/206/Proj/Ohio_Ohio_Job_Outlook_2018-2028.pdf">https://ohiolmi.com/portals/206/Proj/Ohio_Ohio_Job_Outlook_2018-2028.pdf</a> .
[7] Yearly estimate from 20.0% in year 1 to 5.0% in year 15	Yearly Estimate	Compassion fatigue interventions should target 20.0% of first responders in year 1 and 5.0% by year 15. Expert opinion.
[8] Number of prescribers in Lake County	Yearly Estimate	Retrieved from tab "1A. Professional Education", input [1].
[9] Yearly estimate from 5.0% in year 1 to 1.0% in year 15	Yearly Estimate	Compassion fatigue interventions should target 5.0% of prescribers in year 1 and 1.0% by year 15. Expert opinion.
[10] = ([6] * [7]) + ([8] * [9])		2018 data. All individuals aged 18 years and older (80.3% in 2019 in Lake County). The Ohio Development Services Agency projects that the population of Lake County would be stable from 2020 (228,600 residents) through 2035 (228,550 residents). Given the stable population of the County, the 2020 population projection was used. (1) Ohio State Annual Estimates of the Resident Population by Single Year of Age and Sex: April 1, 2010 to July 1, 2019. U.S. Census Bureau, American Community Survey. <a href="https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html">https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html</a> . (2) Ohio Development Services Agency, Population Projections. <a href="https://development.ohio.gov/files/research/P6090.pdf">https://development.ohio.gov/files/research/P6090.pdf</a> .
[11] Total Lake County population aged 18 and older	183,566	2016 data. 8.0% of U.S. adults (19.6 million) had high-impact chronic pain. Dahlhamer J, Lucas J, Zelaya C, Nahin R, Mackey S, DeBar L, Kerns R, Von Korff M, Porter L, Helmick C. Prevalence of Chronic Pain and High-Impact Chronic Pain Among Adults —United States, 2016. Morbidity and Mortality Weekly Report. 2018;67:1001.
[12] = [11] * 8.0%	8.0%	Target panel size per pain specialist is based on 3 visits per year, 25 patients per day and 250 days per year. Informed by (1) Murray M, Davies M, Boushon B. Panel Size: How Many Patients Can One Doctor Manage? Fam Pract Manag. 2007;14:44-51. <a href="https://www.aafp.org/pfm/2007/0400/p44.pdf">https://www.aafp.org/pfm/2007/0400/p44.pdf</a> . (2) Expert opinion.
[13] = [12] / 2,083	2,083	
[14] Retrieved from "Abatement Scaling" tab		

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## 2D. Workforce Expansion and Resiliency

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<b>1. OUD treatment providers</b>															
[1] Total number of prescribers in Lake County	929	940	952	964	976	988	1,001	1,013	1,026	1,039	1,052	1,065	1,078	1,091	1,105
[2] Total number of prescribers to be targeted for recruitment to provide OUD treatment	93	94	95	96	98	0	0	0	0	0	0	0	0	0	0
[3] Total number of recruitment consultants needed	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>2. Medical social workers</b>															
[4] Total number of opioid-related ED visits and hospitalizations	338	323	308	295	281	269	257	245	234	224	214	204	195	186	178
[5] Total number of medical social workers needed	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.7	0.7
<b>3. Reducing burnout/compassion fatigue</b>															
[6] Total number of first responders eligible to receive compassion fatigue interventions	1,257	1,258	1,258	1,259	1,260	1,261	1,262	1,263	1,264	1,264	1,265	1,266	1,267	1,268	1,269
[7] Proportion of first responders to receive compassion fatigue interventions	20.0%	18.9%	17.9%	16.8%	15.7%	14.6%	13.6%	12.5%	11.4%	10.4%	9.3%	8.2%	7.1%	6.1%	5.0%
[8] Total number of prescribers eligible for compassion fatigue interventions	929	940	952	964	976	988	1,001	1,013	1,026	1,039	1,052	1,065	1,078	1,091	1,105
[9] Proportion of prescribers to receive compassion fatigue interventions	5.0%	4.7%	4.4%	4.1%	3.9%	3.6%	3.3%	3.0%	2.7%	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%
[10] Total number of professionals to receive compassion fatigue interventions	298	282	267	251	236	220	204	188	172	156	140	124	107	91	74
<b>4. Pain treatment specialists</b>															
[11] Total Lake County population aged 18 years and older	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	183,566	
[12] Total Lake County population aged 18 years and older with high-impact pain	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	14,685	
[13] Total number of pain treatment specialists needed	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
[14] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50

OUD Opioid Use Disorder; ED Emergency Department

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## 2C. Managing Complications Attributable to the Epidemic

	Year														
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<b>1. HCV and HIV screening</b>															
[1] Total number of opioid injection drug users	1,333	1,273	1,216	1,161	1,109	1,059	1,012	966	923	882	842	804	768	734	701
[2] Proportion of opioid injection drug users to be screened	60.0%	61.4%	62.9%	64.3%	65.7%	67.1%	68.6%	70.0%	71.4%	72.9%	74.3%	75.7%	77.1%	78.6%	80.0%
[3] Total number of opioid injection drug users to be screened	800	782	764	747	729	711	694	677	659	642	626	609	593	576	561
<b>2. HCV treatment</b>															
[4] Total number of prevalent HCV cases with opioid-related IVDU, 2012-2020	149	149	149	149	149	0	0	0	0	0	0	0	0	0	0
[5] Total number of new HCV cases with opioid-related IVDU	79	76	72	69	66	63	60	57	55	52	50	48	46	44	42
[6] Total HCV cases to be treated	226	222	219	216	213	62	59	57	54	52	49	47	45	43	41
<b>3. HIV treatment</b>															
[7] Total number of prevalent HIV cases with opioid-related IVDU, 2012-2020	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[8] Total number of new HIV cases with opioid-related IVDU	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
[9] Total HIV cases to be treated	9	1	1	1	1	1	1	1	1	1	1	1	0	0	0
[10] Total cumulative HIV cases to be treated (from year 1 to year 15)	9	10	11	11	12	12	12	13	13	14	14	14	15	15	15
<b>4. Endocarditis treatment</b>															
[11] Total number of new endocarditis cases with opioid-related IVDU	11	11	10	10	9	9	9	8	8	7	7	7	6	6	6
[12] Intervention Population Trend Ratio	0.96	0.91	0.87	0.83	0.79	0.76	0.73	0.69	0.66	0.63	0.60	0.58	0.55	0.53	0.50

HCV Hepatitis C Virus; HIV Human Immunodeficiency Virus; IVDU Intravenous Drug Use

Notes	Input	Source(s)
[1] Heroin use population in Lake County	Yearly Estimate	Retrieved from tab "1E. Harm Reduction", input [1].
[2] Yearly estimate from 60.0% in year 1 to 80.0% in year 15	Yearly Estimate	2019 data. Proportion of heroin use population that should be screened each year: 60.0% in year 1 (informed by the 54% of people who inject drugs and reported in 2015 that they used a syringe service program in the past year, nationally) and 80.0% by year 15. Screening will not be limited to syringe service programs. Testing frequency is based on HIV guidelines given lack of conclusive data regarding testing frequency for HCV. Centers for Disease Control and Prevention, Frequency of HIV Testing and Time from Infection to Diagnosis Improve. <a href="https://www.cdc.gov/media/releases/2017/p1128-frequency-hiv-testing.html">https://www.cdc.gov/media/releases/2017/p1128-frequency-hiv-testing.html</a> .
[3] = [1] * [2]		
[4] Number of prevalent HCV cases with opioid-related IVDU that can be treated each year	20.0%	By year 5, all existing HCV cases with opioid-related IVDU from 2012-2020 are assumed to have received treatment. Expert opinion.
Proportion of HCV cases with opioid-related IVDU that can be treated each year	20.0%	20.0% of existing HCV cases can be reached each year. Expert opinion.
Proportion of new HCV cases due to IVDU	62.0%	Informed by: (1) Michigan Department of Health & Human Services. 2018 Hepatitis B and C Annual Surveillance Report. <a href="https://www.michigan.gov/documents/mdhhs/2018_REPORT_655667_7.pdf">https://www.michigan.gov/documents/mdhhs/2018_REPORT_655667_7.pdf</a> . (2) Williams IT, Bell BP, Kuhnert W, Alter MJ. Incidence and Transmission Patterns of Acute Hepatitis C in the United States, 1982-2006. Archives of Internal Medicine. 2011;171:242-8.

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Proportion of opioid-related IVDU	70.0%	Informed by: fentanyl, opiates, or heroin as the primary drug of choice reported by Project DAWN/Summit County syringe service program. <a href="https://app.powerbi.com/view?r=eyJrIjoiNTIzYjBIMzAN2Q4YS00M2NlWFrNmEtNDEyYzc3NzA1MTg4IiwiC6ImJlMWl0YJU2LTQ4N2E1NGlyMy04YTI0LWEzYWVmNjViMTFmZlslmMlOf9">https://app.powerbi.com/view?r=eyJrIjoiNTIzYjBIMzAN2Q4YS00M2NlWFrNmEtNDEyYzc3NzA1MTg4IiwiC6ImJlMWl0YJU2LTQ4N2E1NGlyMy04YTI0LWEzYWVmNjViMTFmZlslmMlOf9</a> .
Average number of new HCV cases per year	191	2014-2018 data. Average number of new cases from 2014 to 2018. Ohio Department of Health, Hepatitis C 5-Year Report. <a href="https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/hepatitis-surveillance-program/resources/hepatitis-c-4-year-report">https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/hepatitis-surveillance-program/resources/hepatitis-c-4-year-report</a> .
Average number of new HCV cases per year with opioid-related IVDU	83	Proportion of new HCV cases due to IVDU * Proportion of opioid-related IVDU * Average number of new HCV cases per year.
Number of prevalent HCV cases with opioid-related IVDU 2012-2020	746	Average number of new HCV cases per year * 9 years (2012-2020).
[5] Average number of new HCV cases per year with opioid-related IVDU * [12]		Proportion of new HCV cases due to IVDU * Proportion of opioid-related IVDU * Average number of new HCV cases per year.
[6] = ([4] + [5]) / (1 + 1.2%)	1.2%	Accounts for HCV annual mortality rate. 2016 data (1.2%). National estimate. Rosenberg ES, Rosenthal EM, Hall EW, Barker L, Hofmeister MG, Sullivan PS, Dietz P, Mermin J, Ryerson AB. Prevalence of Hepatitis C Virus Infection in US States and the District of Columbia, 2013 to 2016. JAMA Network Open. 2018;1:e186371.
[7] Number of prevalent HIV cases with opioid-related IVDU that can be treated		All existing HIV cases with opioid-related IVDU from 2012-2020 are assumed to be on treatment. Expert opinion.
Proportion of new HIV cases due to IVDU	15.0%	2019 data. Proportion of new diagnoses of HIV cases in Lake County attributed to IVDU. Ohio Department of Health, Lake County HIV Surveillance Data Tables. <a href="https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/hiv-aids-surveillance-program/resources/lake-county-hiv-surveillance-data-tables">https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/hiv-aids-surveillance-program/resources/lake-county-hiv-surveillance-data-tables</a> .
Proportion of opioid-related IVDU	70.0%	Informed by: fentanyl, opiates, or heroin as the primary drug of choice reported by Project DAWN/Summit County syringe service program. <a href="https://app.powerbi.com/view?r=eyJrIjoiNTIzYjBIMzAN2Q4YS00M2NlWFrNmEtNDEyYzc3NzA1MTg4IiwiC6ImJlMWl0YJU2LTQ4N2E1NGlyMy04YTI0LWEzYWVmNjViMTFmZlslmMlOf9">https://app.powerbi.com/view?r=eyJrIjoiNTIzYjBIMzAN2Q4YS00M2NlWFrNmEtNDEyYzc3NzA1MTg4IiwiC6ImJlMWl0YJU2LTQ4N2E1NGlyMy04YTI0LWEzYWVmNjViMTFmZlslmMlOf9</a> .
Average number of new HIV cases per year	9	Average number of new cases of HIV from 2015 to 2019. Ohio Department of Health, New Diagnoses of HIV Infection Reported in Lake County. <a href="https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/hiv-aids-surveillance-program/resources/lake-county-hiv-surveillance-data-tables">https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/hiv-aids-surveillance-program/resources/lake-county-hiv-surveillance-data-tables</a> .
Average number of new HIV cases per year with opioid-related IVDU	1	Proportion of new HIV cases due to IVDU * Proportion of opioid-related IVDU * Average number of new HIV cases per year.
Number of prevalent HIV cases with opioid-related IVDU 2012-2020	9	Average number of new HIV cases per year * 9 years (2012-2020).
[8] Average number of new HIV cases per year with opioid-related IVDU * [12]		Proportion of new HIV cases due to IVDU * Proportion of opioid-related IVDU * Average number of new HIV cases per year.
[9] = ([7] + [8])		
[10] = [9] for year 1 and = [9] + [10] from the previous year for the remaining years / (1 + 2.0%)	2.0%	2018 data. Accounts for HIV annual mortality rate (2.0%). 646 deaths among individuals with HIV in Ohio / 32,940 living with HIV in Ohio = 2.0%. Centers for Disease Control and Prevention. Atlas Plus. <a href="https://gis.cdc.gov/grasp/nchstpatlas/tables.html">https://gis.cdc.gov/grasp/nchstpatlas/tables.html</a> .
[11] Number of new endocarditis cases with opioid-related IVDU * [12]	13	Average number of new OUD-endocarditis cases per year per 100,000 population * population in Lake County retrieved from tab "1C. Drug Disposal", input [1].
Average number of new OUD-endocarditis cases per year per 100,000 population	5.5	2016 data. In the East North Central Midwest U.S. census region there were 5.5 OUD-endocarditis inpatient stays per 100,000 population. Weiss AJ, Heslin KC, Stocks C, Owens PL. Hospital Inpatient Stays Related to Opioid Use Disorder and Endocarditis, 2016: Statistical Brief# 256. Agency for Healthcare Research and Quality. 2020;20.
Endocarditis annual mortality rate	6.4%	2016 data. Accounts for endocarditis annual mortality rate (6.4%). Kadri AN, Wilner B, Hernandez AV, Nakhoul G, Chahine J, Griffin B, Pettersson G, Grimm R, Navia J, Gordon S, Kapadia SR. Geographic Trends, Patient Characteristics, and Outcomes of Infective Endocarditis Associated With Drug Abuse in the United States From 2002 to 2016. Journal of the American Heart Association. 2019;8:e012969.
[12] Retrieved from "Abatement Scaling" tab		

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Costs Description		
[3] HCV/HIV screening cost per case		
[6] HCV treatment cost per case		
[10] HIV treatment cost per case per year		
[11] Endocarditis treatment cost per case		
Suggested Costs	Value	Source(s)
HCV/HIV screening cost per case	\$71.00	Cost in 2015 dollars. Schackman BR, Leff JA, Barter DM, DiLorenzo MA, Feaster DJ, Mutsch LR, Freedberg KA, Linas BP. Cost-Effectiveness of Rapid Hepatitis C Virus (HCV) Testing and Simultaneous Rapid HCV and HIV Testing in Substance Abuse Treatment Programs. Addiction. 2015;110:129-143.
HCV treatment cost per case per year	\$24,000	Cost in 2018 dollars. Gilead began selling "authorized" generic versions of Epclusa and Harvoni in January 2019 at a list price of \$24,000. Johnson, Steven R. Gilead's Generic Hep C Drugs May Increase Access Through Medicaid. Modern Healthcare. September 29, 2018.
HIV treatment cost per case	\$31,147	Cost in 2011 dollars. Ritchwood TD, Bishu KG, Egede LE. Trends in Healthcare Expenditure among People Living with HIV/AIDS in the United States: Evidence from 10 Years of Nationally Representative Data. International Journal for Equity in Health. 2017;16:188.
Endocarditis treatment cost per case		
Source #1	\$50,000	Cost in 2015 dollars. Cost for drug-dependence endocarditis hospitalization. Fleischauer AT, Ruhl L, Rhea S, Barnes E. Hospitalizations for Endocarditis and Associated Health Care Costs Among Persons With Diagnosed Drug Dependence—North Carolina, 2010–2015. Morbidity and Mortality Weekly Report. 2017;66:569.
Source #2	\$37,460	Cost in 2015 dollars. \$17,306,464 total charges / 462 cases. Bates MC, Annie F, Jha A, Kerns F. Increasing Incidence of IV-Drug Use Associated Endocarditis in Southern West Virginia and Potential Economic Impact. Clinical Cardiology. 2019;42:432-7.
Source #3	\$95,799	Cost in 2015 dollars. Medicare or Medicaid coverage. Keeshin SW, Feinberg J. Endocarditis as a Marker for New Epidemics of Injection Drug Use. the American Journal of the Medical Sciences. 2016;352:609-14.

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